

# *Fire and Flood at Concordia University Archives, January 1982*

by **NANCY MARRELLI**

On Saturday, 2 January 1982, a security guard making his regular rounds of Concordia University buildings (including rented spaces in downtown Montreal) noticed smoke coming out of the second floor of the building in which the University Archives and Records Centre was housed. The fire department was called. As the Archives had been closed since 23 December for the Christmas break, and as there were no smoke or fire detectors in the building, it was impossible to know how long the fire may have been smouldering before the smoke was noticed. However, it took nearly twelve hours before all the flames were extinguished in the three buildings eventually involved in the blaze.

The Archives was on the ground floor of the most seriously damaged building. At the peak of the fire, there were twenty-one hoses trained on the building, and the water streamed into the Archives from all directions. The water level in the Archives was about one metre high at its worst point. The fire department attempted to cover some of the shelves with tarpaulins when they realized what was inside the Archives, but there were too few tarpaulins and most of them were placed after the water damage had occurred. The firefighters had also made numerous holes in the ceilings of the upper floors in order to prevent a buildup of water and consequent collapse. Water gushed through these holes directly onto the stacks of the Archives. There was some soot and smoke damage, but the most serious problems were caused by the water and the fallen debris.

During and after the fire, no university personnel were allowed anywhere near the burning buildings. We had no idea of the extent of the damage, although we were told approximately how high the water level had gone. After all the flames were out, the building was padlocked, sealed, and the entire area was cordoned off by the fire department. It was unclear if the building would stand or collapse. No one was allowed to enter the building for three full days.

## **BACKGROUND**

In 1974 Sir George Williams University and Loyola College merged to become Concordia University. Loyola had established an Archives Department in 1973, but Sir George Williams had no archival or records management operations. With the merger in 1974 the mandate of the unit was expanded to cover both campuses of the new university.



*Concordia University Archives after the fire, 6 January 1982. Courtesy of Ian Westbury.*

At the time of the fire in January 1982, the Archives and Records Management Unit was “on hold.” There had been a serious budget cut, the mandate was being revised to stress the records management function, the Director’s position was vacant, and there was only a single full-time employee on the staff. The Unit’s emphasis was in acquiring records rather than processing and making materials available. Boxes of semiactive, inactive, and historical material were all stored

together without distinction. All materials were stored in Hollinger boxes, whether paper documents, photographs, artifacts, etc. There was a great lack of documentation concerning the collection, even of the most descriptive nature. In total there were about 2,000 feet of material. As might be expected, there was no essential records program, no disaster plan, and no smoke or fire detection equipment.

## **SALVAGE PREPARATIONS**

University officials gathered quickly after the fire and began to formulate contingency plans. A salvage team was quickly formed, and all the appropriate university services were put at its disposal. We conferred with colleagues from the McGill and Université de Montréal Archives, and started preparing for the eventual removal of the records. It was impossible to plan specifically until we had some idea of the condition of the building, but we quickly obtained and studied reports of other fires in archives and libraries and devised a general plan.

After this initial uncertainty, the building was declared safe. When we entered the Archives, the scene was one of quiet devastation. Using flashlights and wearing the required hard hats, we found that a very large portion of the collection was soaked. The water had reached the second shelf level, and many units were soaked due to the water pouring from the ceiling. Furniture and equipment were piled with debris, material on open shelves had spilled onto the floor, and some boxes had split open on the shelves. Fortunately, only two boxes were open on the floor with their contents spilled out. Ice had formed on some boxes, shelves, and walls, but many boxes were wet and not yet frozen. These wet boxes were greatly weakened and could not hold the weight of their contents. The humidity level was extremely high and there was a damp, mouldy smell in the building. Water was dripping from the ceilings and light fixtures; the floor was covered with ice patches, making walking extremely hazardous; soaked and swollen doors could not be opened or closed; locks were frozen; glass and debris were everywhere. The numbers on many boxes had faded and some boxes on the bottom shelves were frozen to each other and to the shelves.

The Canadian Conservation Institute (CCI) was called and made arrangements to come to Montreal the next day. From this time on, the CCI provided expert and essential support to the salvage operation through all the stages of retrieval and restoration. It is difficult to overstate the valuable assistance they provided over many long months in resolving many complicated problems.

We moved quickly to set up the salvage operation. We rented a freezer truck to hold wet materials, we borrowed five hundred milk crates from Sealtest, and arrangements were made for emergency lighting, de-icing of locks, and removal of debris blocking passageways. A moving crew was formed from the University Distribution staff, who had done previous Archives moves and were aware of the problems of handling our materials; a temporary office was set up in the University Credit Union next to the fire site; temporary storage was arranged in a nearby university building; a security guard was stationed at the fire site; and access was limited to the salvage crew. The immediate needs were twofold: to remove the material from the building as soon as possible and to stabilize everything as quickly as possible to prevent deterioration and mould proliferation.



*The aftermath, boxes bulging with water, frozen to each other and the shelves, and covered with soot and dirt, and the floor covered with fallen debris. Courtesy of Canadian Press.*

## SALVAGE OPERATION

Fortunately, the weather was cold and stayed cold almost the entire time our materials were in transit. This protected the documents from deterioration and slowed the mould proliferation until we could get everything into freezer trucks. But it also meant that the working conditions were horrendous.

Materials were carefully inspected by inserting the bare hand into a wet or frozen box of documents, not once but several times for each box, because the condition of any one box was not necessarily uniform. We established three categories and each box was dealt with according to its state:

1. *Dry/Damp*: These were moved out as quickly as possible and were air-dried immediately after another careful inspection. No truly wet materials were included in this category. The boxes were spread out about one foot apart and opened. Large fans were turned on in the drying area and the boxes were checked every eight hours until the water content of the paper returned to normal. The fans were turned on and off regularly to prevent overheating.

2. *Wet but Dryable through carefully monitored air-drying:* These materials were stored in the freezer truck for air-drying at a later date when we would be able to do the careful monitoring which was required to prevent further deterioration.

3. *Saturated or Partly Saturated needing commercial drying:* These were the boxes which had been completely or partly submerged in water and which were completely or partially saturated. In many cases, they were already solid blocks of ice. They were also stored in the freezer trucks by category.

The logistical problems were many. Where necessary, disintegrating cardboard boxes were removed, or partially removed, and the contents repacked into plastic crates. Small cardboard mailing tags were attached to them with the box number on it. We tried to determine which boxes were likely to have important photo collections and, where possible, we removed the photographs and separated each item by inserting silicone paper between each photo. It was a minimal but quite effective preventive treatment against any further damage. Although the University Public Relations Department handled media relations, some time had to be taken from the actual salvage operations to hold a press visit, give interviews, and arrange for pictures and film footage. The University Audio-Visual Department took all the wet and damaged film, videotape, and microforms, and arranged for their conservation treatment. We were very fortunate to have all the facilities of a large university and the cooperation of both administration and staff to handle the myriad details which had to be dealt with quickly and effectively. Within one week of the fire, all boxes had been removed from the fire site.

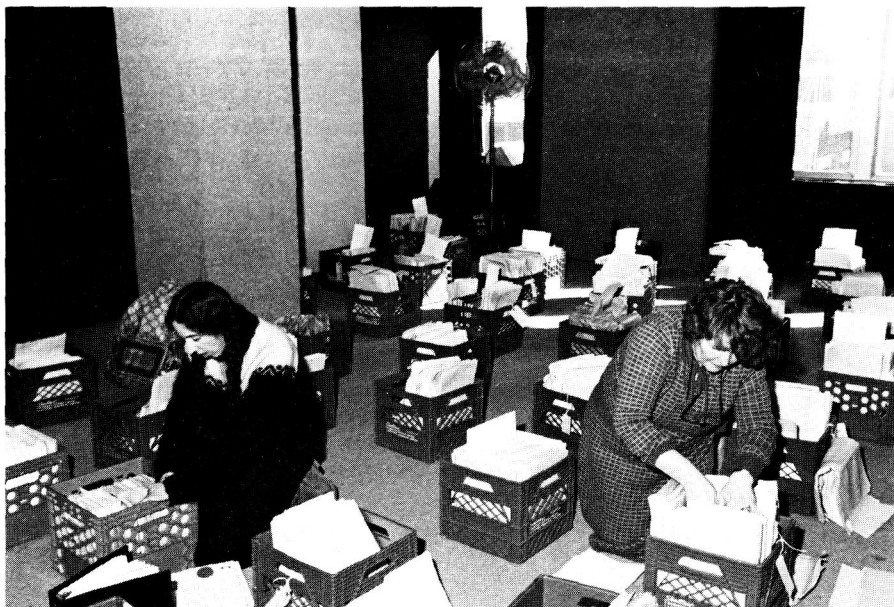
## DRYING

### *Air Drying*

All the materials which belonged in Category 2 above were removed in small batches from the freezer trucks. They were spaced about two feet apart on the floor and a careful inspection was made of each box to ensure that none of the materials in the box were completely saturated. During this inspection, we also removed any materials needing special treatment. Very large fans were turned on to maintain constant air circulation in the drying areas and minimize mould proliferation. Each box was monitored at least once a day until it was completely dry. Where necessary, materials were moved from wet boxes and placed in one or more open milk crates to increase the air circulation around the wet materials and speed up the drying process. The fans were turned on and off regularly to prevent overheating. The major problems we attempted to avoid were mould proliferation, running of inks, rusting of metal (binders, paper clips, staples, etc.), and general deterioration of paper. We made every effort to maintain the order of documents in the boxes, although this was sometimes impossible.

### *Commercial Drying*

We began searching for commercial drying facilities very soon after the fire site had been evacuated. We had about 1,000 feet of saturated and frozen documents which we wanted to dry in a reasonable number of batches. We ran the full range of frozen-food-processing plants to commercial carpet dryers who wanted to try their machines on our materials. We were looking for a vacuum-drying or freeze-drying facility which would dry our materials with the least possible damage during the drying process.



*Air-drying documents in milk crates. The dangling tags record box numbers for the drying records. Courtesy of Brian M. McNeil.*

After several weeks of telephone calls and promising leads, we contacted Freeze Dry Foods in Oakville, Ontario, and discussed the possibility of using their facility. There were several problems. Our materials were contaminated with mould and the company was a food-processing plant: federal approval of the project would be necessary. Their dollies which hold the material to be freeze-dried had fixed shelves which were three inches high: our boxes were about one cubic foot or were milk crates. Finally, they had never attempted to freeze-dry anything as large as a box of frozen documents and no one could predict how long it might take. The cost would be about \$8,000 to \$10,000 for each 24-hour period!

We were able to arrange federal approval to process our materials as long as no food-processing was done in the plant at the same time. The company worked out a way to alter their dollies to accommodate our boxes. Some of the shelves, which have pipes where hot propylene glycol circulates and provides the heat source for the sublimation which is the crucial part of the freeze-drying process, could be removed to allow the boxes to fit onto the dollies. This would involve a one-time expense and a certain amount of time, but it would be possible. It would also severely limit the amount of material which could be processed at one time. However, time and money for processing were more difficult problems. The insurance company wanted definite dollar amounts before committing itself to the use of freeze-drying, but we could not provide a defensible estimate since no one knew how long the process would take. It was finally agreed that we would try a test batch for a fixed sum and on March 8 we arrived in Oakville with a freezer truck which contained all our documents. We began loading immediately into their 25 feet by 6 feet by 8 feet chamber. During the drying operation, we carefully monitored several control

boxes, weighing and inspecting them each time the chamber was opened, noting observations about general condition, dryness, etc. The test batch worked well and gave us a reasonable idea on which to base a contract for the whole 1,000 feet. The entire freeze-drying operation took three weeks and cost \$106,000. During this time we parked the freezer truck in the company parking lot and used it as a storage facility. Our materials were shipped back directly to a fumigation facility in Montreal.

## STERILIZATION

Before any drying had taken place at all, we were strongly warned by the CCI that our entire collection should be sterilized to minimize the possibilities of mould proliferation when the boxes were back on the shelves. Because of the large quantity of materials to be sterilized, the only reasonable possibility was a large facility which could use ethylene oxide. We received substantial technical assistance from John Dawson of CCI on the dangers of ethylene oxide and the safety precautions required. We found that the federal Department of Agriculture Fumigation Chamber in Montreal was the only place which was large enough (1,200 cubic feet: 21 feet by 6.5 feet by 9 feet) and which would follow our safety specifications for the use of ethylene oxide.

The entire collection was processed in four batches. We had to transfer all the material in milk crates into cardboard boxes because ethylene oxide is retained longer in plastic than in cardboard. John Dawson came to Montreal to work with the Agriculture staff and loaned us CCI gas emission testing equipment for the duration of the sterilization. Fortunately, the chamber is built so that one can test for gas emission without opening the door. We were therefore able to open the chamber and remove the materials quickly and carefully to an aeration area only when the gas emission level was set at an acceptably low level. The materials were then aerated in a separate area with outside ventilation until the gas emission levels were zero and there was no danger to anyone handling the boxes. The sterilization took four weeks and cost about \$4,500.

## RESTORATION

A box-by-box inspection of the entire collection thereafter uncovered the following problems: the running of ink; photographs stuck together, rippled, or surface damaged; ink transferred from the back of one photograph onto the face of the next; badly rippled or bent paper; three-ring binders rusted and deformed; three-ring binders with the plastic mis-shaped, which occurred in the freeze-dryer where they were inflated and stretched in the vacuum chamber and then were deflated when the vacuum was removed; scotch-tape and glue came unstuck and therefore the records or pages so bound together became loose (note: 3M Magic Mending tape did not come undone); staples and metal paper clips rusted; bound materials were in bad shape, both paper and cloth bindings; dirt from soot, smoke, and dirty water stained pages; coated papers were blocked (stuck together); coated photocopy paper (zinc oxide) was very severely damaged, coating (which includes the image) flaking off the page in varying degrees (the worst damage was in those materials which were saturated with water and were also freeze-dried); boxes were mis-shaped and badly weakened; file folders were damaged and acid-free folders were no longer

acid-free; phonograph records were badly damaged with dirt and water, and most were warped; and pages were stained from coloured paper, covers, and other materials.

A massive restoration will have to take place over the next several years. This project will include: replacement of all boxes, file folders, binders, and labels; washing and drying of rippled or damaged photographs (some of the ink transfer damage will be removed in this process. For unique or extremely valuable photographs, rephotographing will be required); flattening of badly bent paper in a press; retaping of materials which came unglued; replacement of damaged sheets, either by transcription or photocopying, where appropriate; page by page cleaning and restoration of valuable original documents; identification and relabelling of 1,300 strips of microfilm which became detached from their identifying jacket mountings when under water; rebinding or replacement, as appropriate, of damaged bound materials: paper, hardcover, leather, etc.; and repair or replacement of coated paper materials: for example, yearbooks from both founding institutions which are very severely damaged.

## RECOMMENDATIONS

As a result of this painful experience, I have several recommendations to make in order that others may avoid some of the problems we encountered and to facilitate any salvage operation which might have to take place as a result of a fire or flood.

*Keep your collection in good order and keep potential disasters in mind.* The basic principles of good management of a collection are also the best principles for protecting yourself against disaster. *Keep your collection in good order.* Separate semiactive, inactive, and historical documents and you may therefore be able to set priorities for salvage. Keep accurate records, including a record of which boxes are on which shelves, and make sure they are kept up-to-date and are available outside the archives in case of disaster. Keep your materials in appropriate containers and use appropriate protective materials, for example, do not use the cheapest boxes available for unique or valuable materials and make sure you have your photographs and negatives separated and protected with mylar sleeves and/or acid-free envelopes. Keep potential disasters in mind: avoid tapes, glues, etc. which will come unstuck in damp or wet conditions. If you must use paper clips, avoid metal ones and make sure your box markings are as disaster-proof as possible, that is, water-resistant and available in a number of places on each box.

*Maintain an up-to-date essential records and disaster plan* for your facility and be sure that copies of these are available outside the institution. Try to be realistic when you develop your disaster plan. Many disaster plans I have seen would be more of a hindrance than a help in any real-life disaster. Moreover, the very act of drafting and then maintaining a good, always current, disaster plan raises an archives' awareness of possible emergency conditions and hones its sense of preparedness, and thus is a good way to lessen the effects of a disaster. A disaster usually means that there is a great number of unpredictable variables. Inform yourself as much as possible about the technical problems with which you will have to deal, find reserve facilities that are appropriate for your collection, and talk with as many people as possible who have experienced an archival disaster. It is most important to have your institution's cooperation as well as the freedom to act if disaster strikes. Yet you must establish



effective communication channels. Progress reports were issued regularly at Concordia and they were very effective in winning the approval of decision-makers. In addition, such reports have provided a valuable record of what we did and why throughout the salvage operation. Consider building appropriate communication channels into your disaster plan. When you develop your disaster plan, consider replacement instead of salvage if this is possible. In many cases, it will be much less expensive. Think of commercial drying only as an expensive last resort.

*Make sure your insurance coverage is appropriate and adequate.* Discuss carefully with your insurance broker what kinds of coverage you need and what kinds of disasters could happen. It is especially important to ensure that your policy will cover the kinds of damage you may have. Have your collection appraised if this is necessary. Remember that insurance companies think in terms of “market value” when they discuss replacement.

*Install smoke and water detectors* in your facility and if possible have them connected to a central security system which has a 24-hour-a-day coverage. Make sure sprinkler systems are activated individually and not system-wide.

Most importantly, if you should have a disaster: keep calm, but make sure some one person or group is in charge; stabilize your materials as quickly as possible; get help from the experts, and people who have experience with archival disasters; once your materials are stabilized, take your time to decide what is your best possible next move; and make sure there is a steady flow of information to the “outside” about the status of your salvage operation. Finally, hope for a spot of good luck! You’ll need it!