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als. Double-wall cardboard cartons combined with acid-free tissue wads proved very effective at protecting porcelain but the work of making the wads kept dozens of staff and volunteers busy for weeks! Paintings were wrapped in bubble-wrap, which proved adequate protection for the smaller ones but the larger ones needed very careful handling to avoid damage. Our most ornate frames were protected with wooden travelling frames - expensive but worth it. Geology went mainly into standard plastic Euro-crates. That was a compromise because the geology is actually staying in off-site storage for several years whilst a new facility is created. Bulk archaeology was already in stout cardboard boxes and these were loaded onto half-size Euro-pallet (800 x 600 mm) small enough to manoeuvre in narrow museum spaces. The investment in two hand pallet trucks was extremely wise, as you can move almost anything and any weight on those and the ingenious bogies meant that even their small wheels could negotiate irregular and lumpy surfaces with ease.

It is vitally important to keep records of what was packed and where it is shipped to at every stage of a collections move. Your insurers will require this I am sure and it will be extremely helpful to know where any item is when it comes to moving it back in an orderly manner. Ideally you should be able to supply the collections as the curators require them for display or storage. Every package we created received a bar-coded serial number on a self-adhesive label (Avery have better adhesion than cheaper ones), so it had a unique identity even if some of the objects inside were not in the documentation system. Remember, once packed the item becomes anonymous; which is a security blessing; but you need a system to know where any said object is located.

We used a MODES database with the object format and we recorded accession numbers and short description of what was packed, who packed it, when, an insurance value (per boxful) where it was before it was packed and where it was stored initially before moving off site. This went onto paper forms and then entered to a MODES file. The shipping and movements of packages was also recorded on forms (in triplicate) and entered to another MODES database, which was linked to the packing file. We recorded a list of packages shipped, when they moved them, where from and where to, date and also the shelf location they ended up on and who was the driver, co-driver and the person who placed it at its final resting-place. As a record, the people involved signed forms to show that they took responsibility for that action.

A word of warning: in my experience major redevelopments tend to expel collections from their ancestral homes and you are very likely to find that they don't all fit back in when the development is over. Take care to control the enthusiasm of the project managers for new public facilities and don't let them crowd out the

collections. Also, don't forget to plan for the storage of the packing materials and the (packed and unpacked) collections during the move. All that plastic and cardboard is a big fire-load and needs to be carefully planned. Consider ordering all in one go (to get the best price), but ask for delivery in stages (so you are not swamped with materials).

If anyone requires more detail on the technicalities, or can use any recycled tissue wads please contact Martin.
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Moving 100,001 things to the new Ludlow Museum Resource Centre
Kate Andrew, Ludlow Museum

A brief history of Ludlow Museum

Ludlow Museum is one of three museums run by Shropshire County Museum Service, the original museum being that of the Ludlow Natural History Society, founded in 1833. The society was at the forefront of local research into the new science of geology, hosting Sir Roderick Murchison during his fieldwork for the Silurian System. The Revd T.T. Lewis, perhaps the true discoverer of the stratigraphy of the upper Silurian was a member. The original museum displayed geology, natural history and local history collections in a single large upstairs room, next door to the fashionable Ludlow Assembly Rooms. The original museum room is in fact now incorporated into the 21st century Assembly Rooms complex.

Like many similar Natural History society museums, the institution fell on hard times after the First World War. Gentlemen from London came to remove the important fossils, in fact almost the entire fossil collection, the mineral collection was sold to Birmingham Museum and by the late 1940s the society was wound up. In the mid 1950s the museum was re-launched in the Buttercross building by the County Council as a local history museum. At first, the museum operated with no curator, but in 1958, the late John Norton MBE was appointed as curator. John set about re-building the collections, retrieving geology and natural history specimens that had been dispersed around the town and receiving back non-type material from the Natural History Museum. He also undertook a massive amount of new collecting in geology, natural history and social history. Over the thirty years of his curatorship, the collection grew, moving first from offices in the current town library, to the old fire station and then in 1972 to a redundant school,

the current collection storage building. A county museum service grew up over the same period, with Ludlow acting at first as the main centre for the all reserve collections and from 1986 for biology, geology, Ludlow related art and Ludlow related and smaller social history. In 1993, the Ludlow Museum displays moved back to the Assembly Rooms building, but this time to the ground floor – 3 permanent galleries and a temporary exhibition space opened fully in 1995.

Throughout its history, the museum operated on a shoe string – storage boxes were old shirt boxes from the local men's outfitters, the budget allowed for the purchase of only a couple of insect store boxes a year and at one stage, new taxidermy had to be paid for in kind by exchanging non-Shropshire material from the collection. For many years the geology collecting policy simply stated that the collection would be "rationalised". All Shropshire County Museum sites now have full registration status and the collections at Ludlow now constitute some 35,000 geological specimens, 58,000 biological specimens and around 10,000 social history items. In the last few years, detailed collection assessments have been carried out on the geology, biology and costume collections, while the WRMCM document, First Principles, recognises the geology collection as one of the largest and most important in the region.

Around ten years ago, a programme of capital expenditure on libraries in Shropshire identified the need for a new library in Ludlow. The current museum building, an old school, was seen as a suitable candidate for a conversion and the museum collections were threatened with eviction to a warehouse on an industrial estate in Ludlow and later a museum collections centre in a warehouse some thirty miles away. Lobbying by the Friends of Ludlow Museum in response to this threat put paid to this and agreement was reached that the new library building could also incorporate a museum collections storage building. A capital budget of £1 million was set aside for the library element, the library and museum store sites had a capital value on their sale and a new site was "donated" by South Shropshire District Council. With the advent of the HLF, came the opportunity to build a sufficiently large budget to pay for a £4.7 million new building, the Ludlow Library and Museum Resource Centre. However, the route to achieving this centre has been long and tortuous. My first task on arriving in Ludlow in the summer of 1995 was to co-author the first brief for a new centre, plans were drawn up from this, costs set out, planning permission sought and the first HLF bid was submitted in June 1996. To our disappointment, the bid was commended on need and theoretical grounds, but rejected on architectural grounds in November 1996. In the spring of 1997 £80K was granted by HLF as a development grant for a new design with an external architect working in partnership with the county council. Then followed a second HLF bid in June 1998 for £2.3 million, and a £2 million award was made later that year. 1999 was spent producing detailed plans and

costing up the project but then came much uncertainty over Shropshire County Council approving funding of the balance; a fund raising campaign by the Friends was launched in 2000 and finally work started on the site in January 2001. Fund raising continues, with close to £200,000 raised to date by the Friends and the Development Trust. The library element of the building is now nearing completion and hand over of the museum section of the site is pencilled in for November 2002.

Preparing for the move

It will be 30 years since the collections were last moved. In 1972, the move was carried out by three members of staff (two of whom still work at the museum) using a single flat bed trolley (also still in use). The old and new buildings were only about 50 metres apart; the current move distance is about 300m by the most direct walking route, but about a half a mile on public roads due to a one-way system.

Since the new building has been a possibility for almost a decade, a major investment has been made in collection storage materials and furniture over the last seven years. There has been massive voluntary input (close to 150,000 hours) and many collection management improvements have been undertaken. By the time the move commences, collection storage will have been improved sufficiently to enable a safe move without the need for wasteful temporary packing.

Easy moving elements

- Secure undercover unloading area large enough for a 7.5 tonne lorry.
- Easy access to stores but stores in a secure zone in the heart of the building
- Level and smooth floors throughout
- Large lift to all floors
- Quarantine room
- 3 x 2m walk in freezer for de-infestation programme
- Magnetic door closers linked to fire alarm system

Following the 2002 NSCG conference in Norwich, the blister effect lino that had appeared on the swatch boards for finishes was changed back to a smooth finish product, in line with the original brief. Specimens are either nested in acid free tissue paper or cut out top layer of LD45 plastazote over a lower layer. The re-packing by two volunteer teams took nearly six years to complete. Our choice of a series of standard specimen boxes was actually the basis for calculating space

requirements in the new geology store and in fact dictated the tender specification for all of the storage equipment:

- i. For boxed collections, we have selected a standard footprint for boxes in four depths. Two of these boxes fit snugly side by side on our current shelving and three will be accommodated on the new shelving.
- ii. For the geology collection, we have opted for a series of 3 depths of metal drawer that accommodate 6 of our largest specimen box without any wasted space. All sizes of box will fit in the two deepest sizes and all but the largest boxes will fit in the shallow drawers.

It was clear from the start, that a number of people needed to sign up to the idea of the move and therefore feel that they "owned" the process. The HLF assessor also requested a move policy. To achieve this we held a brainstorming session and thrashed out a series of objectives, (concluding that achieving the first three of these objectives will form the basis for achieving the fourth):

- **To move the contents of the museum store and the library to their new home starting from the date of hand-over and completing within six months**
- **To manage the move in a planned, controlled and secure manner**
- **To achieve a pest-free and stable environment by minimising risks from all ten agents of deterioration**
- **To establish a workable and first class service for all users once the move is complete**

We also discussed a range of move methods, from DIY to a commercial moving company, problem areas, problem specimens and so on. More recently SCC Health and Safety officers have read and commented on the brief. Our brainstorming session identified the need to investigate several areas in more detail, but two key areas in minimising the risk were agreed:

- 1) Preventative conservation training, the knowledge that physical forces cause the most damage, the size of collections, cost and time efficiency, all meant that using temporary packaging materials was to be avoided as far as possible, hence 7 years of collections storage upgrades to minimise the need for temporary packing.
- 2) A desire to create a new environment as free from pests as possible meant that a bulk de-infestation programme was also required. The autumn 2001 Pest Odyssey meeting in London clarified thinking on the best "fumigation" method. A detailed assessment of the sections of the

collection that required treatment showed that the method chosen would need to be fairly fast, freezing to -30 and the Thermolignum method remain the ideal choice.

Thermolignum kindly visited the site and quoted for a unit to be installed there, but this proved too costly to resource, although we do feel that costs could be recouped by hiring out whichever type of facility we end up with. Time pressure may yet be brought to bear, as the new owners of our old building have a big grant aided conversion to get underway, so our de-infestation approach may yet change.

The decision on the combined move and de-infestation method was reached after two members of the move team visited Donna Young at Liverpool. Once this flash of inspiration had occurred, it proved the key to organising the whole move. We realised that the easiest way to achieve the move was to stack our standard footprint storage boxes onto pallets. After investigation of pallet sizes and some trials, I found that 800x1200 Euro-pallets are the only standard and therefore cheap size that fit through our store doors. 4 standard sized brown boxes fit on the pallet and one shelving bays of boxes equates to a stack about 1.3m high, creating a moveable unit. Boxes will be held onto the pallets with shrink-wrap and sealed in polythene if freezing is required. 10 pallets will fit into the freezer, 12 onto a 7.5 tonne lorry. Large or other un-boxed items such as mounted birds and fluid collections will be moved in deep stacking plastic boxes, stacked onto pallets. Cabinets will be strapped onto pallets. Three loads of pallets and boxes will be purchased, to allow one being loaded, one in the freezer and one being unloaded.

Move timetable

A 20-week move timetable has been drawn up, however, even two months before the proposed start date, a firm hand-over date has yet to be provided. A balance between speed and cost currently means that the move is scheduled to go via our own 3x2m freezer in 16 freezer runs. This will take a minimum of 16 weeks, providing that everything works properly. It might be possible to speed the process up by hiring an extra freezer, but we would need an additional 3 phase electricity supply and a big hire fee. The portable Thermolignum method would reduce the time considerably and could double as the removal vehicle, but again is costly and needs a 3 phase supply too. Where possible, we are freezing and bagging low use items such as journal runs and reference books now and will leave them bagged and sealed up until we have moved.

The moves are supposed to be subject to correct environmental conditions in the

stores – to this end, in December 2001, we installed a Hanwell system in the old building and hope to get radio linked units in each of the new stores as soon as possible.

What still needs to be done?

- We are currently compiling a paper box-by-box inventory and also slowly entering this onto our collections database as a logging method for the move.
- Deciding whether we hire a lorry for 5 months or employ a removal firm on a Monday and use their lorry (H&S advice favours use of a removal company).
- Hiring additional temporary staff to help with the move, if we are moving the collection ourselves.
- Detailed risk assessments on each type of collection, as well as on the procedures for both loading pallets and using wheeled steps. (These are not Industrial grade 1 rated).
- Checking the weight of boxes and becoming familiar with typical weight loadings by starting to weigh packed boxes and record weights.

Acknowledgements

Throughout the project, study visits have been made to a number of new facilities or museums in the process of moving and their sharing of information is greatly appreciated. Clare Valentine and Richard Sabin NHM, Althea MacKenzie, Hereford Museum, Gabriela MacKinnon, formerly of Birmingham Museum and Art Gallery, Tracey Seddon, NMG Conservation Centre and Donna Young, Liverpool Museum have been particularly helpful recently. Rob Waller and the Canadian Museum of Nature conservation section have provided advice over many years, an internship at the early stages of the CMN new build planning and a follow up study visit in 1997, funded by MGC once they had moved in. Steve Clarke of Shropshire CC H&S has recently read the move policy, undertaken a site visit and provided useful detailed guidance.

Postscript

It a matter of much regret that John Norton, the former Curator will not be able to see the new home for the collections he built up. John sadly died in June of this year after a long struggle with ill health; it was his fondest hope to see the new building completed. He is greatly missed.

Renaissance in the Regions, Natural Sciences Conservation Group response

NSCG broadly welcomes the Renaissance in the Regions report with its proposal for funding the English museums. We hope that the monies identified for the nine Regional hubs and partnerships represent new money for the sector rather than a redistribution of existing funding.

NSCG has expressed concern in the past about the loss of specialist conservation posts as the Area Museum Services changed their roles from providers to enablers. With the closure of the conservation facilities, staff have left the sector, skills are lost, internships are no longer possible, career prospects are reduced and training courses therefore cease to offer training in these disciplines, thereby creating a chicken and egg situation. Through our links with BCG and GCG we have also noted a gradual decline in natural history curation posts and a rise in the number of “orphaned” collections. Initiatives such as the Peripatetic Geological and Biological Curator posts and the BCG Sunflower campaign were successful in addressing problems on a regional level, but have now ceased.

The proposal for regional hubs and partnerships offering facilities and services to the museums in their regions in our view offers a chance to address these problems.

NSCG would like to see in each region:

- Funding to create and resource a spacious, properly equipped and easily accessible conservation facility employing some specialist staff and able to offer space for free-lance staff. All types of collections from the region can then be worked on in appropriate climatic conditions, in safety and comfort and without compromise to the collections.
- Funding for specialist conservators to monitor regional collections regularly and long term to improve storage conditions for collections.
- A facility in each region to “fumigate” organic collections, accessible to all museums in the region.
- A disaster response unit
- Facilities for the preparation of post-mortem biological material and geological specimens.
- Specialist curation staff to cover all disciplines of the natural sciences held by regional museums. The full extent of natural science collections in the UK has been determined by the FENSCORE project, so an analysis of need would be straightforward.