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## **NSCG Newsletter**

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Title: Historic Storage of Invertebrates at Liverpool Museum

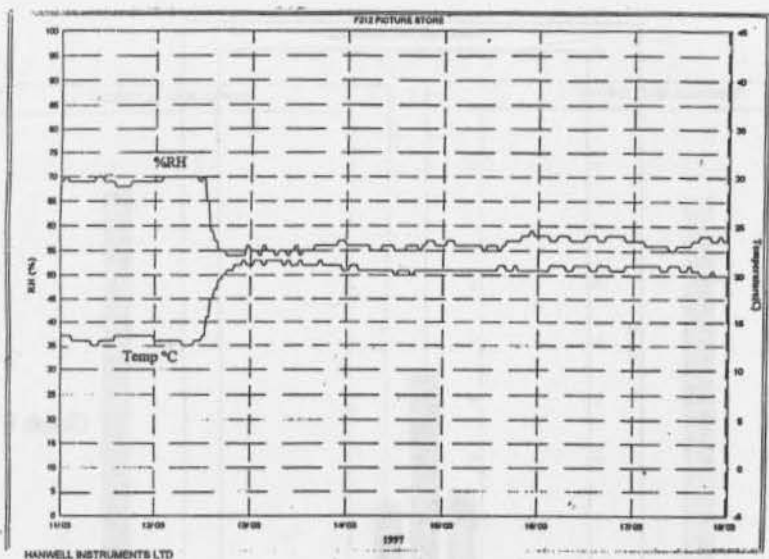
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Graph 9

sensor. The heaters are simply plugged into the wall-mounted relay boxes beneath. The sensors can be calibrated to switch heaters or humidifiers on or off when a particular RH is reached or passed. In our case the humidistats are calibrated to switch the heaters on when the RH passes above 60%

All stores are also monitored with Hanwell monitors.

**Graph 9** This shows what happened in one of the Mansion attic stores when the heater and humidistat started to work. The heater immediately started warming the room and correspondingly lowered the RH to between 55% and 60 %.

We are not finished with improvements to the heating system yet. We are awaiting money to upgrade the heating system in the Museum and place humidistats and sensors in the gallery.

In the Mansion we are wiring each radiator with its own humidistat which will turn it on or off at its own individual set point.

Many problems still exist, principally the expectation of staff that all galleries should be as warm as their own living rooms. However the Conservation section is still on speaking terms with all the staff, and the environment in both buildings has definitely changed for the better.

*Bob Entwistle and Jeanette Pearson.*

## Historic Storage of Invertebrates at Liverpool Museum

Information for this paper came from the research of a museum volunteer and collector, Reverend Henry Hugh Higgins (1814-1893). A paper entitled 'Museums of Natural History' was written by him in 1884 and this gave much information on the early natural history displays, particularly the invertebrates. Higgins used his experience in rehousing the invertebrate collections over a 12 year period, from the Duke Street premises to its present site in William Brown Street from 1860. Higgins was keen to incorporate the palaeontology collections into his new invertebrate storage/display but was discouraged from doing so by the Liverpool Geological Society who insisted on separate, stratigraphically arranged displays.

It may also be mentioned that Higgins was also chairman of the Museum's sub-committee and founded the Museums Association late in his life in 1890.

### Invertebrate Storage

The invertebrate collections seem to be stored in a 'storage on display' system quite typical of the time with drawers at the base and glass cases at the top. In the 'Animals without Bones' section there were approximately 20 table cases, each measuring five by ten feet. In total, the cases held drawers which accommodated 240 trays of specimens to display 1000 square feet. The cases were equipped with upright compartments and drawers measuring 27 by 16 inches. The drawers were arranged so that they could be lifted out if required for lectures, an indication, perhaps of just how vital it was to use the collections and that access was considered important.

Each drawer gave about three square feet of exhibition space. One third of each drawer was divided into three sections. The left side contained fossil representatives of the group, the central area contained a tablet of information relating to the objects in the drawer, and the right-hand side contained British examples. The remaining two-thirds of each drawer were used to display examples of foreign specimens. Higgins also mentions that this type of storage was not used for the microscopic or soft-bodied specimens.

## Conservation Problems

### 1. Custodial Neglect

Higgins criticises the labelling, particularly of display specimens, noting that he has observed inaccurate, absent, faded and illegible labelling in museums. He also mentioned the problems caused by vibrations from visitors viewing the collections, which often separated the specimen from its label and that this was made worse if the display was overcrowded. To Higgins, good labelling was one of the most important factors.

Although Higgins does not use the word 'Conservation' he does describe collection care as 'the passage of a living hand,' describing custodial neglect in the following way:

"In a public museum where the cases are supposed to be, but very rarely are, dust tight, their contents, if left to themselves soon acquire an indescribable aspect of neglect. I remember to have seen many very respectable series of insects, birds, shells etc. wearing such an obsolete look as to repel the advances of all except the most resolute observers."

He also states that the specimens in many displays look as if they have been assembled by a "porter or charwoman." Higgins suggests that all the work on maintenance of displays should be carried out by the Curator and assistant and that this should occupy about 1/3 of their work time for a large collection. Do we spend that much time on collection care for storage on display? Higgins states that "yet that too frequent uncared-for look must be banished from within the walls of the museum if it is properly to fulfill its function."

In the paper, Higgins does not make it clear which museums he is referring to, but it does show that even when many museums were new, it was not long before displays of natural history objects were neglected. He also emphasises that collecting policies need to be rigorous to exclude material which cannot be of use or will cause curatorial problems later on.

### 2. Theft and Vandalism

Not mentioned as being a particular problem for natural history specimens at Liverpool Museum in 1884. However, it is stated that all important specimens (?type and figured) should be stored in closed cabinets. Storage of microscopic specimens such as rhizopoda, radiolaria and diatoms on slides should be in a laboratory with microscopes, close to the aquarium and not on public display.

### 3. Light Damage

Described in the following way: "So injurious was known to be the long-continued and direct action of light upon a large proportion of museum specimens, that two roller-blinds, one of brown holland<sup>1</sup> the other of black and nearly opaque stuff, were affixed to each skylight in the invertebrate rooms." However, Higgins complained that the blinds were not always in working order and that they kept a number of American oil-cloth covers to place over the sloping table-cases, except when the museum was open.

It is mentioned that certain categories of insect are prone to fading, particularly the nocturnal Lepidoptera. Higgins also observed that light did not seem to affect insects whose colour was due to diffraction (i.e. striated surface) like the *Morpho cypris* butterfly. However, those whose colour was dependant on pigments faded on exposure to light.

Higgins also stated the effect of light on shells, again mentioning that those with pigments faded, whereas those with iridescence and no pigment maintained their colour, such as the nacreous interior of *Haliotis iris*. Other materials which were found to experience colour loss in light included some of the brightly coloured corals, but he suggested the use of specimens which can be easily replaced for displays. Higgins said that "for specimens that can be replaced, no better end can be desired than an honourable decay in the service of the public."

#### 4. Pollution

Of pollution, Higgins mentions the particulate variety only saying "The penetrating power of particles floating in the atmosphere exceeds what is easily credible." One of the solutions to this problem was to have the table cases made with extreme care so that they fitted closely when closed. The lids were lined with slips of velvet border on both sides so they closed together without a gap. Once shut, the lids were screwed down by a half-turn clamp and were locked in the centre. The hinges to these cases were of the type used on pianos and a tin gutter ran below the hinge to catch any dust particles which might get through. Despite all these measures to prevent particulates from accumulating, Higgins stated that "The continued trampling of thousands stirs up swarms of impurities that find their way into the cases to an extent that is positively painful, and admits of no remedy except by passing every group under the good offices of a loving hand at least four times in the year."

The lid of table cases had a glass covering underneath and some drawers had glass lids to prevent particulate pollution. Higgins also mentioned a type of pollution which appeared as minute black specks on the surface of the glass cases. He observed that this was difficult to remove and seemed to cause a chemical reaction with the glass surface. If removed, the glass appeared damaged underneath. This may have been due to the chemical factories in Liverpool, which used open methods of producing acids, with disastrous pollution problems. Higgins suggested the avoidance of soft, fine plate glass for table cases as they were easily scratched when cleaned if particulates like sand were present.

#### 5. Pests

This problem is not specifically dealt with in Higgins' paper, but he mentioned that insect, spider and crustacea collections were stored in corked, entomology-style drawers with glass lids. These drawers had double sides so that camphor could be applied.

#### 6. Physical Force

Certain categories of material, such as insects, scorpions and spider crabs were secured by pins, but they had a problem with shell materials and it was mentioned that "the vibrations caused by the constant tread of many visitors would send them wandering off, far from their names, in all directions." A common solution to this was to attach the specimens to a mount made of bay wood, to which a thin paper covering was attached. The edges of the wood were then planed with fine sandpaper. Once dry, a label was then pinned rather than pasted on. The pins were then cut down. We still have many old labels in the collections with pin marks where they were attached.

With the mollusca specimens, Higgins stated that the easiest way of securing them was by gluing the shell down. He did not approve of this method, saying that it "destroys the character of the natural object, turning it into a piece of museum furniture." He mentioned that occasionally a little isinglass<sup>2</sup> may be used to fix a smooth shell in position, but that the gluing down of small shells seems "simply barbarous." To these problems, Higgins suggested two solutions, the first was to use pins to hold some shells, echinoderms and crustaceans and the second to use pill-box lids or shallow porcelain dishes, infilled with cotton wool to protect the specimens. Some pill boxes had glass lids so the specimens were secure whilst on display. He felt that this was the most satisfactory way to display small, fragile specimens. Glass tubes were used for dry microscopic specimens like foraminifera and flattened glass phials used for wet preparations of worms, myriapods and spiders. Sertularian zoophytes were pressed flat and held down with spots of India-rubber adhesive dissolved in turpentine.

For larger specimens, such as sponges and echinoderms, protection by being suspended on brass wire frames in a lattice, secured them, allowing viewing from the underside.

#### Conclusion

From this paper written in 1884, we can see that many of the conservation problems associated with storage and display areas of museums had already been identified. All these storage problems had been given solutions at least in the short term. Where modern storage differs is that more

consideration is given to the types of materials used and their stability for the long-term. Our range and choice of materials is now much greater, particularly following developments in polymer chemistry. What we must remember is that at the time this paper was written the storage materials were probably less than 20 years old and long term changes in many of them would not be apparent. Whatever we know now, it is useful to have an account of the materials used in the past and although materials have changed, the same conservation problems with storage and display areas still exist today.

**Reference:**

Higgins, H.H. (1884) *Museums of Natural History*, Liverpool Literary and Philosophical Society, Volume 38, 1883-4, p.183-221.

**Materials used in Storage and Display**

Liverpool Museum 1884.

MATERIAL	USE	DETAILS
Brown Holland	Roller Blind	Used in conjunction with a second blind of unspecified material.
American oil-cloth	Table case covers	Light-proof substitute for blinds.
Velvet	Dust seals for cases	
Tin	Gutter in case	Used to collect dust particles.
Glass	Case/drawer cover	Pollution and damage protection,
Lid, phial & shelf	Containers for small specimens.	
Wood (Bay)	Text/ label tablet	Paper and specimens sometimes attached.
	Dividers	Also used to separate groups of specimens in drawers.

?Brass	Pins, frames	Used to hold specimens in place.
Cork	Drawer base	An attachment for pinned objects.
Silk (scarlet-corded)	Dividers	Used to separate rows of insects.
Isinglass	Adhesive	To attach smooth shells to tablet.
Porcelain	Containers	To display small specimens.
Cotton-wool	Packing	Used to protect fragile objects in pill-boxes.
India-rubber	Adhesive	To attach sertularian zoophytes
Turpentine	Solvent	Used to dissolve india-rubber
Wood (unspecified)	Display case and drawers.	
Cloth (unspecified dark blue material)	Drawer lining	Used to protect and display coral specimens.
Camphor	Pesticide	Applied to double-lined drawers.

<sup>1</sup> A fine heavy-duty linen material

<sup>2</sup> A glue derived from the air bladders of fish.

*Wendy Simkiss  
NMGM Earth Sciences*

