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The Biology Curator

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suitable for long term storage with ethanol based fluid collections. In general, when compared with glass containers, the fluid pH was lower as was the ethanol concentration and the volume levels. Often the possibility of a reaction between the container and the fluid. It was noted that the greatest variable in this study relates to collection management, and demonstrates the need to set standards and not rely on folklore.

Janet Waddington (Royal Ontario Museum) talked about the problem of a white efflorescence which has been observed on calcitic echinoderm and some bivalve fossils from the Silurian. The fossils are stored in wooden draws of oak or plywood with many variants in finish. In an attempt to find the cause of this efflorescence a modified form of Oddy testing (a method for detecting the effects of corrosive chemicals by monitoring the tarnishing of metal coupons, usually silver, copper and lead) was carried out. This involved hanging metal coupons in the cabinets to see if there was any pattern in the specimens which have been affected. The controls coupons, which were outside the cabinets, showed more corrosion than those in the cabinets, showing a buffering effect from atmospheric pollution. Some of the affected fossil was then clean and placed in sealed jars to carry out an Oddy test, but again no corrosive chemicals were indicated. Temperature and humidity measurements showed that the cabinets were also buffering the fossils from environmental effects. Samples of the efflorescence were then examined under a variety of analytical tools: XRD, FTIR and XRMA. This found gypsum, calcium formate and a whole range of calcium sulphate hydrates. No correlation between the wood type and the efflorescence could be found. Overall no conclusion to the cause of the efflorescence could be found though it is thought possible that the cause could relate to a one off event such as a past period of very high humidity, though attempts to replicate such conditions have yet to produce results.

Staying on the subject of efflorescence, David Von Endt (Smithsonian Institute) revisited Byne's disease, raising some interesting questions. Byne's disease forms on mollusc shells as a result of volatile acids released from wood leaving a white efflorescence on the shells and essentially consists of a calcium formate - acetate complex. The research induced the effect on oyster shells (calcite), cowry (aragonite), and bone (calcium phosphate) at 80°C in the presence of pure formic acetic and formic acids, a 50/50 mixture of each and a 75/25 mixture of each. In addition various materials were tested at 80°C in the absence and presence of water and various levels of oxygen enrichment for their ability to induce Byne's disease: oak; pine; poplar; masonite; paper trays; cork; cotton. By taking air samples from the reaction vessels and using mass spectrometry the chemical changes were examined. It was found that in the dried state the paper trays; cotton; and poplar released very little formic acid, whilst the other materials tested released high concentrations. When water, and oxygen, was added the formic acid produced increased considerably in all cases (oak produced the highest concentrations) except the cotton wool. With acetic acid, very little was produced by the materials either in the dry or wet state, although the addition of oxygen did increase production, though not to the levels that were expected. Overall, only cotton wool did not induce Byne's disease on

the shell material. However in only one case was the calcium formate - acetate double salt found, which was considered to be the main component of Byne's disease. The efflorescence was found to be composed primarily of calcium formate and calcium acetate, and another related but previously undescribed mineral. SEM studies also noticed the presence of micro-organisms on some of the shell samples, which may suggest another mechanism for the formation of the efflorescence.

The conference finished with a series of talks related to computers and the utilising of databases which essentially consisted of people showing their various systems.

The morning of the second day also saw an amusing 'interlude' billed as 'Video presentation: A different kind of science and conservation at the academy'. In the first clip the video shows the catching of a new species in Yellowstone National Park - a "Barney". The next clip showed Earle Spamer and Ned Gilmore of the Academy looking very serious and sitting in immaculate lab coats being interviewed on the Canadian 'Discovery' Channel about the discovery of this new species, "Barney" (-a cuddly purple dinosaur) and how they tracked its movement to a shopping mall by following press reports! How a straight face was kept whilst being interviewed.....

Overall a good conference which was worth attending, even if it meant having to check out numerous American bars and late night diners!

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Report on the Second World Congress on the Care and Preservation of Natural History Collections, University of Cambridge, 20-24 August 1996.

Delegates to the Congress began to arrive on Tuesday afternoon and evening with lectures commencing first thing on Wednesday morning and running until Saturday. Lectures throughout the conference were held in a large lecture theatre close to the Zoology Museum, while poster sessions, tea breaks, workshops and lunches were on the other side of the road in the Department of Earth Sciences.

A small but very useful trade fair was available throughout the meeting. The number and quality of the posters presented was impressive, sensibly poster authors were asked to indicate times that they would be available to discuss their posters during tea & lunch breaks. This area was an important opportunity to meet other delegates and start conversations that were continued later in the pubs, where many of the more fascinating interactions took place.

Approximately 280 delegates from around the world were registered and while the Natural History Museum was well represented there were only a relatively small proportion of delegates from UK local authority museums.

The Keynote Address entitled *Natural History in the 21st century* was by Professor Nicolai Vorontsov of the Russian Academy of Sciences. Professor Vorontsov argued that natural history should be studied because it is an inherently interesting subject and thus worthy of study. However the perceptions of biology by the public and politicians gave it low priority compared to other subjects.

Possibly as a result of this low regard there is a shortage of biologists, particularly taxonomists. Professor Vorontsov said that not only does biodiversity need to be studied and protected but the specialists that study it need protecting too. It is up to the scientific community to change the perceptions of politicians and business people and convince them that natural heritage is as valuable than cultural heritage.

Professor Vorontsov pointed out that we are only 7 generations removed from Linnaeus yet the advances made in biology are enormous. As an example he gave an overview of biological discoveries this century, among them immunogenetics, a synthetic theory of evolution, a change of the species concept, numerical taxonomy. The past few decades have seen the invention of new techniques such as electrophoresis, electron microscopy.

Prof Vorontsov summed up that despite all these advances the discovery and description of new species is limited by the number of personnel available. On a global scale resources are stretched. It has been estimated for example that in rainforests approximately 90% of the species have been undescribed when the forest was destroyed.

The morning sessions continued with three lectures on perceptions and attitudes towards natural history.

Dr Jack Horner gave an entertaining talk which raised a number of questions about the purpose and use of collections. In mentioning the film *Jurassic Park*, he pointed out that the computer generated dinosaurs looked, moved and behaved in the film as a direct result of the latest research being carried out on museum collections. He posed the question: "Do models, reconstructions and computer generated images or information count as data?"

Dr Horner's talk showed that as theories, techniques and technology advanced existing collections need to be re-examined, many new discoveries have been made from existing collections. However he stressed the importance of proper field collection of specimens and associated data in the first place.

Dr Horner discussed the importance of making collections available for study by specialists, pointing out that if the collections were not used there was not much point to collecting them in the first place. Each generation of scientists finds new techniques which not only lead to brand new discoveries but may allow reinterpretation of old ones. However certain study techniques are destructive and it may have to be accepted that in order to answer some questions some specimens may be destroyed. The dilemma is that if collections are not worked on they are useless, yet should curators allow a destructive technique to be used?

Dr Richard Leakey noted that the people to whom he should be talking such as politicians and businessmen were not at the conference, he was already talking to the converted. He stated that as his career changed from curator

to head of a government department to politician, his own viewpoint has changed. He now found himself on the other side of the same argument he had as a curator: "Why are museums and collections important?"

Dr Leakey explained the situation in some developing countries where it is difficult to justify support for museums when the countries themselves are so poor and marginalised. He pointed out that the status of curators is low and even if well qualified earn a lot less than the national average. There is the genuine problem of a brain drain to more developed countries. Some radical decisions may have to be made, for example, a museum often founded by a colonial power may now be in the middle of a city on a valuable piece of land. Should the land be sold and the money used to move the museum and pay a living wages to the curators?

Collections and museums should be balanced with the interests of local populations. In Africa for example, local people can see their country's fauna in the wild, they often wanted to see exotic non-native animals.

Tim Radford (*The Guardian*) suggested that journalists and scientists have something in common, they both ask questions. He observed that the value, meaning and significance of objects changes over time. He made the point that when dealing with the press, museum curators in the UK can use the public and media perception of them as being the voice of authority, quoting a curator lends an air of truth! He finished by saying that it is up to curators to promote themselves and their collections, if information is not shared then it cannot be valued and if the public does not value a museum it is effectively dead.

Sir Robert May (Chief Scientific Officer, Office of Science and Technology) spoke about the present Government having a concern for the stewardship of the environment. It supports science for improving the quality of life and its use to create wealth for the country (or at least to avoid costs to the country). The government input to natural history collections is concentrating on taxonomy and systematics research which is based on collections in natural history museums. In world terms the balance of resources is wrong, with the majority of work to be done in the third world where there are fewer trained people or resources to tackle the problem. Sir Robert also noted that in case we get complacent in the UK, the rate of destruction of SSSI's is equivalent to the rate of rain forest destruction.

Dr John Nudds (Manchester Museum) gave an overview of the Manchester meeting on the value and valuation of natural history collections. The published proceedings will be available shortly.

Dr Meredith Lane (US National Science Foundation) & Dr John Busby (World Conservation Monitoring Centre) considered some of the issues involved in establishing international databases. How museums tend to go their own way in developing a system and it is then difficult to exchange data. The potential opportunities are that information will be globally available via the Internet. Collections data will become a very valuable resource in the future.

Martin Jakobowski and Richard Herrington (both NHM) described the relevance of museum collections to industry

(eg. microfossils to the oil industry). For example, as the number of micropalaeontologists in the oil industry has fallen dramatically there has been rising concern that micropalaeontological collections held by oil companies are at risk and likely to be disposed of. Some notable examples were given, eg. BP collection of 60,000 slides of foraminifera and ostracods etc. Jakobowski considered why a museum might consider acquiring such a collection : to enhance the existing collections; for public relations reasons; to generate income (with future inquiries from the industry); to help raise public awareness and because of the materials relevance to science. One point he raised was that if you are going to accept a collection you should try to get funding or sponsorship for its up-keep as part of the deal.

The discussion that followed concentrated on the ethics of taking collections from industry and trying to attract funding at the same time. Some thought this unrealistic as most collections were being disposed of because of financial constraint, loss of staff or storage space etc., and so it would be most unlikely that financial support would be forthcoming. The added danger was that if proper disposal was thought to be likely to incur costs, such collections would just be quietly got rid of. Some delegates saw the possible danger of a shift in emphasis of work towards income-generating.

Dr Des Griffin (Australian Museum) pointed out that nature conservation is as much about people as wildlife. He posed a question - "Do we do what we can now or do we wait until we have a full record of biodiversity first ?" Whilst all species are not known and all habitats are not fully explored, museums can make an extremely significant contribution to the understanding and preservation of global biodiversity. He made reference to the need for museums to get involved in politics and raising our public profile by forging better links with NGOs and the environment movement.

He then went on to discuss repatriation of material and/or data in this context.

Rob Waller (Canadian Museum of Nature) & Tom Strang (CCI) both spoke about the need for training in natural sciences and outlined some of the pitfalls and problems that can occur - largely due to misunderstandings and lack of training in conservation. Rob Waller and his colleagues at the Canadian Museum of Nature have just published *Developing Staff Resources for Managing Collections*.

Friday's presentations were given by curators from a number of developing countries, who gave detailed case studies of how their collections were being developed and used.

For example in Mexico they used the collections to establish which species of indigenous tree to plant in a recently deforested area. (Perhaps someone should tell the Forestry Commission !)

IT Workshops

Angela Spinezze of Willoughby Associates *The future of databases* Willoughby Associates were awarded the contract to develop the LASSI project using their Multi Mimsy system on the Oracle database. She suggested that new

developments in databases will change the way that information will be stored and accessed. Dr Spinezze described Oracle which is an open system which can be used on the Internet as well as a stand-alone PC. Oracle can incorporate standards such as SPECTRUM.

Surveys showed that the largest user group on the Internet have educational occupations and that these users are likely to be interested in museum information. At present information is just stored, but in future information will be managed.

Other programmes such as Geographic Information Systems (GIS) and visual reproductions would increase the range of the audience.

More powerful searching tools and artificial intelligence would allow a wider range of searches, such as thematic and automatic abstracting.

The Jason Project - Phil Phillips (National Museum on Mersyside).

The Jason project was developed in the USA by Dr Bob Ballard to allow schoolchildren direct access to field scientists during an expedition or example for, children can control the direction of a remote submersible. Live pictures were transmitted from the site and children could talk to the scientists involved ; Liverpool Museum was one of the few British institutions to take part.

Charles Copp demonstrated two databases developed for geological information. GD2 on Advanced Revelation and the Inter Agency Earth Sciences Database. He demonstrated the difficulties with GD2. The programme is very specialised and not very adaptable as it has a complicated programming language. It is difficult to interrogate, like similar programmes it may be difficult to access or exchange data with other programmes.

The Inter Agency Earth Sciences Database uses a more widely commercially available programme Paradox. The idea is that core information is kept as a number of data tables. For network use this is kept on a fileserver and different users interrogate the data.

The Internet Cafe was lacking in any advisors to show on how to get the best use of the Internet and it was left to delegates to find their own way about.

The first day workshops were really just demonstrations and there was little time to participate.

CONSERVATION WORKSHOPS

As an organiser and participant in one of the workshops, Kate Andrew was only able to *Meet the UK Natural Sciences Conservation Community*. This workshop was intended as a forum for demonstrators from a representative selection of natural science conservation disciplines to work on specimens and demonstrate current thinking and discuss problems. Members of the Natural Sciences Conservation Group were on hand talk to participants to share problems and possible solutions. The range of projects on show and the effort which those taking part had put into preparing material was impressive. Present were Kate Andrew (geological mounting and packing); Paul Brown (microscope slides); Caroline Buttler (large mineral storage boxes); Caroline Cotgrove and Donna Hughes (herbarium

conservation); Simon Moore (freeze drying fat); Vicky Purewal (wax plant model conservation); Maggie Reilly (fluid collections); Simon Trodd (Corex boxes for taxidermy mounts); and the staff of DeMontford University, Lincoln College with a demonstration of work being undertaken on natural history specimens on their conservation degree course.

May Cassar opened the Building Environmental Control Strategies for Housing Natural History Collections Workshop and then introduced Dr Tadj Oreszczyn (UCL) who discussed the recently relaxed approach there is to temperature and relative humidity (rH) limits. There was some discussion of ventilation and using carbon dioxide sensors to control ventilation. This was felt to be particularly appropriate for galleries where there is a need for increased ventilation tied to an increase in the number of people. It was pointed out that air conditioning works by controlling temperature before rH, the latest ideas including a broader band of tolerance for rH and more relaxed temperatures, primarily for human comfort, were discussed. The workshop then went on to consider the use of more integrated designs to take into account using ventilation and heating systems to control rH (with a humidistat rather than a thermostat). One delegate mentioned keeping a close eye on the legal requirements for working spaces. Lawrence Butt (Norman Foster Associates) then described the complexities of the new system in the Earth Galleries at the Natural History Museum, which uses a combination of temperature control (heating/cooling) together with automatically controlled ventilation.

Andrew Culver (Collections Care Forum) lead the Assessment and Surveys of collection condition : Why, When and How ? Workshop. He managed to cram a great deal into the two hours starting from the basic premise of why you would want to do a survey in the first place. Sample reasons were : to determine the need to improve conditions; prioritize specimens needing conservation or for monitoring changes. Caroline Butler & Vicky Purewal (both from Cardiff) and Rob Huxley (NHM) all talked about surveys they had been involved in and demonstrated how to tailor a survey design to your specific needs. The workshop then went on to demonstrate how one might go about carrying out a survey.

A useful workshop with participation from all the delegates. This was about the only chance to hear other delegates experiences and gave an interesting view on making priorities when for some delegates this meant rescuing collections during warfare or terrorist attacks! It makes holes in the roof look fairly minor in comparison.

Dr William Vartorella gave a lecture and ran a workshop on Fundraising, in which he claimed never to have paid for a plane ticket, a photocopier or a new computer. Apparently it's as easy as looking in the Sunday colour supplements and targeting companies that use wildlife pictures for their ads. ! It might well be if you can talk like Mr Vartorella ! There is a copy of his handout in the BCG Archives should anyone be interested.

Saturday morning saw the last few stalwarts back in the lecture theatre at 9am. After an opening comment by Rob Huxley (NHM) about what has been happening since the

Madrid resolutions were made, namely that a working party has been deciding possible ways forward for the WCCR - the meeting was throw open to the floor. After much debate it was decided that a small task force chaired and chosen jointly by Des Griffin and Dr J Mutangah, the Director of the Kenyan Museum Service, should decide about the next moves. These being to evaluate the Madrid Resolutions and identify how to implement them.

Incidentally, the Director of the Kenyan Museum Service has offered to host the next Congress !

The packed daily programme from 9am to around 6pm meant that evening events were the best opportunity to meet other delegates and to chat. The first two evenings there were drinks parties, the first held in the impressive Great Hall of St John's College with its painted ceiling. The second was in the upper galleries of the Fitzwilliam Museum. The following night, Thursday, an evening of Elizabethan Dance brought a team of dancers dressed in sumptuous replicas of Elizabethan costume to the Great Hall in St. John's to entertain a somewhat bemused audience to three "sets" of dances performed to taped music with a quick break to down a glass of wine in between ! Whilst a substantial portion of the audience seemed to subscribe to the "men-in-tights" school of dance appreciation, a fair number took part in the first of the audience participation dances and found counting three steps forward, one back and two sideways not quite as straightforward as it might have seemed, before most of the remaining delegates joined in an Elizabethan conga.

The final social event of the conference the Banquet, was outside most of our price ranges, but our sources tell us that it was a sumptuous affair, with over tones of "wafer-thin mints" !

Most delegates stayed in St. John's College with a small, but select BCG contingent further up the road at New Hall. We all found the rooms, excellent catering, conference car park and helpful college staff were up to hotel standards.

The organisation of this event was impressive, the technical staff of the Department of Earth Sciences were on hand at all times, serving lunch and drinks, operating projectors and microphones, directing delegates and solving problems. The conference administrator and organiser were also on hand all week and made what must have been a tremendous undertaking, look moderately effortless. Although Chris Collins seemed to have shorter hair than previously, he didn't look quite as stressed as his counterpart at the First World Congress in Madrid !

It became apparent through the course of the meeting that it was concentrating on the scientific use of collections, in particularly systematics and biodiversity. Most of the papers were concerned with the contents and research use of collections. The approach was more curatorial and there were few papers on practical collections conservation. Overall the talks seemed aimed at the national museum and academic level. There were no speakers from local authority museums to explain their point of view; although we suspect that museums in many countries have similar problems to UK local authority museums, research is probably the last thing many local authority curators have a remit for. In fact a major problem is basic collection management and care,

Conference Reports

particularly where collections do not have natural history curators, this was not touched on by the congress.

Sir Robert May for example spoke only about funding for taxonomic and ecological research, not the more mundane but equally important problems of storage and documentation.

For all the enthusiasm about global information exchanges a number of points were overlooked; in taxonomy it is still necessary to examine specimens and original documents, although computers may help to locate specimens and may possibly shorten search times. Condensing information for data entry may omit valuable data. Paper records often have annotations and may be used to verify identities of researchers etc., in the rush to computerise we should not undervalue written records.

Several speakers talked about management of information which seemed slightly worrying. The reality is that information is a valuable commodity and there was little explanation of how this would be dealt with.

The number of talks and nine o'clock start made for long and tiring days. The most valuable part of the meeting were the workshops, where the delegates could actually discuss their different problems and approaches to solutions. The major disappointment for us all was scheduling clashes meant that we were all only able to attend one conservation workshop, when they were all so relevant. For example on the second day a chance to meet UK natural sciences conservators, (a room which should have been open throughout the whole congress) was timetabled against workshops running at the same time. In future we suggest that workshops and discussion groups occupy a more prominent part of the proceedings.

It would seem nothing much has changed since Paul Richards' review of the Madrid Meeting (Newsletter Feb. 1993, Vol.10, No.1) !

The attendance of the authors at this Congress was possible as the result of each of us receiving a £100 bursary from the Biology Curators' Group for which we are very grateful.

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|------------------|---------------------------------------|
| Kate Andrew | Shropshire County Museum Service |
| David Lampard | Ipswich Museum |
| Clare Valentine | The Natural History Museum, London |
| Tony Walentowicz | Chelmsford Museums Service |

WORLDWIDE WEB SITES

Please send in any favourite sites, useful sites or just plain funny sites of interest to natural science curators.

Chris Collins tells me that there is an on-line Newsletter set up as a result of the Cambridge World Congress of 1996. To request inclusion on the mailing list send an e-mail to WCCR-request@esc.cam.ac.uk

Ingrid Birker at the Redpath Museum, McGill University, Montreal, Canada sends details of their Homepage on <http://www.mcgill.ca/redpath>

The Natural History Museum home page is on <http://www.nhm.ac.uk/index.html> This should contain information on the UK Systematics Forum too.

Manchester Museum has range of pages available. Collections information on line is present for parts of the Invertebrate Zoology, Minerals and Vertebrate Zoology collections. The home page is on <http://www.mcc.ac.uk/museum/> but turn off your "auto load images" setting first, because the home page is rather heavy on slow images!

The most exciting recent development from a local authority museum is from Hampshire County Museums Service. Their pages are part of a big Hampshire site covering many of the County Council's functions. The Museum Services pages are extremely extensive, and contain detailed collection catalogue information. The botany catalogue contains a list of vascular plant species, with the lowest level giving quite detailed catalogue entries. The search facility is excellent, but try to use more than the one word, because 'adder' brings up ladder and bladder too! Do have a look at this excellent information resource at <http://www.hants.gov.uk/museums/index.html>

Steve Garland

Book Review

Rose, Carolyn L., Hawks, Catharine A. and Geonways, Hugh H. (editors). 1995. *Storage of Natural History Collections: a Preventative Conservation Approach*. Society for the Preservation of Natural History Collections, 448 pp. Price \$36.00.

(This is a complementary volume to *Storage of Natural History Collections: Ideas and Practical Solutions* (Rose and de Torres, 1992)).

Contents

This new monograph claims to provide the basic information required to select storage approaches that are appropriate in a particular set of circumstances, and to make informed judgements about all aspects of collection environments.

It is presented in 5 sections together with a glossary and comprehensive (17 page) index. The following description of contents is drawn largely from the Preface to the book.

Section 1 'Creating and Managing Storage Facilities' explores the factors that cause deterioration and threaten collections, and the assessment of those risks. Methods of creating a protective and secure building for housing collections, as well as maintenance policies and procedures to retain its protective qualities, are then discussed in detail. Topics include: facilities management, architectural design concerns, and approaches to security, fire protection and emergency preparedness.

Section 2. 'Creating and Monitoring Storage Environments' focuses on the localised environment of storage facilities. This section presents methods to estimate storage space needs, to choose among the macro- and micro-