The Biology Curator

Title: Paper, Glue and Print, a one-day conference at the Natural History Museum, London, 31st October, 1995

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These guidelines were endorsed by the SPNHC Council, May 15, 1994, and reflect the result of input by numerous professionals over a three year period. It has been particularly gratifying that the review and comments have involved individuals from all of the professions associated with the use and care of natural history collections: collection managers, curators, conservators, administrators, research scientists, registrars, archivists, etc. This document is meant to serve as a tool for institutions and their staffs to continue to elevate the standards of managing and caring for natural history collections.

Thanks are extended to everyone who has read and commented on any of the numerous versions that led to the development of this product. The efforts of the following individuals are especially appreciated: B. Webb (Co-Chair), D. Duckworth, G. Fitzgerald, C. Hawks, J. Klein, C. Leckie, B. Moore, C. Patterson, C. Rose, J. Simmons, R. Waller, and S. Williams. Funding for reproduction and mailing of drafts for comments was provided by the Virginia Museum of Natural History. — Paisley S. Cato, Co-Chair, Sessional Committee on Common Philosophies and Objectives.

Paper, Glue and Print, a one-day conference at the Natural History Museum, London, 31st October, 1995

About 80 deletes gathered for this meeting at the Natural History Museum in South Kensington including 44 NHM staff and 14 from the Victoria and Albert Museum. The day was sponsored by Arjo-Wiggins, represented by Simon Stanyer, and was organised by Jenny Moore and Janet Margerison Knight. The morning session, chaired by Robert Huxley, comprised four talks.

The first speaker was Annemarie Wierda who is a freelance botany and paper conservator based in he Netherlands. She illustrated, with slides, the results of artificial ageing tests carried out on papers and glues with specific reference to PVA for adhering plant material. The accelerated ageing consisted of a twelve day exposure at 90°C and 50% relative humidity and was carried out at the Royal Library at the Hague. Twenty three papers and tapes were tested including many used at the NHM. Most papers survived well with slight browning in BM boards 3 and Mesdox labels showing brown spots. Deterioration occurred with plastic envelopes probably due to the high temperature of the test. There was some variation between the "same" materials from different suppliers. Eighteen glues and three hotmelt glues were also tested using her own childhood herbarium specimens as test samples. Browning occurred with latexes, dextrim MC and cellulose Gripfix or carbohydrate glues both when used as an adhesive and on the surfaces of linen tapes. Latexes, seccotine and Cow Gum remained sticky long after application and so were not considered suitable for plant preservation. The Polyvinyl family of glues; PV Acetate, PV Alcohol and PV Acrylate, all performed equally well and were considered the best, although too liquid or too thick a mixture caused difficulties in application. Annemarie recommended that the pH of a glue or paper should always be neutral.

The effect of deep-freezing on herbarium specimens and old glues was also studied. She concluded that this can be used as a treatment against insect and fungal attack so long as the bound volumes or sheets are sealed within polyethylene bags to avoid further desiccation although condensation might be a problem. Also, freezing should be rapid to avoid expansion and contraction tearing.

She concluded by describing and discussing the conservation measures which she applied to the Boerhaave Herbarium volume at the Rijks Herbarium, Leiden. After initial photography, she used a minimalist approach by collecting loose fragments into small acid-free envelopes and dry-cleaning soot and dust deposits with gum powder, Wishab sponge and Staedler eraser. Holes and gaps were repaired with "Japanese paper" which was also used as flaps over delicate specimens. Loose plants were reattached with Japanese paper strips and Methylcellulose in 10% solution which was considered to cause minimal damp cockling of the paper.

Brian Pitkin of the NHM talked next of "From Keyboard to Specimen — labelling insects using computers" and covers much of what has been published in his paper in The Biology Curator 4: 24-27 (1995). Many curators now use computers to register and database specimens, and labels can be generated at the same time for the specimens. Brian described his multi-user registration and labelling programme for the Entomology Department (NHM) in Paradox for DOS.

HELP WANTED!

Specialist meetings wanted!

BCG wishes to maintain a programme of small meetings on quite specialised subjects. If anyone can offer such a meeting, please contact Steve Thompson with details. These could be based around a new storage system or a special sort of collection. It may only attract ten or twenty members, but should enable knowledge to be disseminated. If non-BCG meetings are being organised, the Editors will be happy to publicise them through The Biology Curator.

The primary requirement for labels is that the print, paper and glue should be as permanent as possible. All this is possible using computers, but Brian recommended that a small number of specimens should continue to be labelled with traditional pen and permanent ink as an insurance against unforseen deterioration. For similar reasons, glass microscope slides should be scribed with a diamond stulus in case the label comes unstuck and is lost. Brian quoted the favoured papers used within the NHM such as Wiggins Teaps 100% rag (WT HWS 550) and Goatskin Parchment paper and Byron Weston Paper Co.'s Resistall as all suitable for immersion in spirit and formalin. Dry specimens require acid-free archive quality paper such as Mellotex Smooth Ultra White by Tullis Russell. Brian discussed the problem of a tried and trusted paper that seemingly changed its characteristics for the worse. One must be aware that products such as ink or paper may be "improved" by manufacturers without notification! Mistakes can also be made within museums; and Brian related the story of a complaint to a manufacturer about a paper which had not deteriorated in quality but which turned out to be from a different source! Brian also described the ongoing search for suitable indelible and waterproof inks to be used in conjunction with laserjet, inkjet and dot matrix printers. Many inks used in computer printers are not water or spirit proof. Dotmatrix printers help to press the ink into the paper unlike some other systems where the print can life off the paper under certain conditions and float away.

"To Glue or not to Glue . . .?" That was the . . . title of Donna Hughes' contribution, referring to the preparation of fresh herbarium specimens. As with many techniques used in preparation, collections care and preventive conservation, those who use them have often done so because of custom, sometimes without fully understanding why they use them. Gluing specimens reduces risk of handling damage, keeps the data attached, makes specimens suitable for postage and because Linnaeus said so as he didn't like paper strips. Methods which do not involve gluing specimens allow easier access to the underside, stop any damage when the specimen or the paper shrinks and permits removal of bits for DNA analysis. Also there is no tasty food in the form of starch-based glue for pests to get stuck into. Alternative attachment methods are strapping with gummed paper and gummed linen-backed paper strips, which must be positioned correctly to avoid the specimen shifting. Sewing is another, which (in her opinion) can damage the specimen and the mounting paper. Also she discussed enclosing specimens in card folders traditionally used for cryptogamic material, Mellinex and cellophane envelopes.

Application methods to dispense the correct amount of glue to a specimen were illustrated. PVA from a commercial nozzled container or from a syringe need to be expertly controlled. The glass sheet method used at the Royal Botanic Gardens, Edinburgh allows only the parts of the plant which will have contact with the paper to be covered with glue. Brush application requires the glue to have a low viscosity to avoid too much pressure on the specimen. She asked whether anyone had tried spraying glue onto specimens. She summarised that glues to use should be stable, flexible, reversible and long lasting.

Adrian Doyle talked about the use of PVA (Poly Vinyl Acetate) emulsion in the Palaeontology Lab at the NHM as consolidant, adhesive and filler to stabilise subfossil and fossil bone. He listed the properties required and suggested advantages of PVA products as stable, non-tacky, flexible with high plasticiser content, transparent, colourless, matt finish, small particle size so good penetration, negatively charged, and neutral pH. Methods of application such as brushing, injection, immersion and vacuum impregnation were discussed. He showed slides of the gravity drip impregnation apparatus used in the Palaeontology Laboratory to continually soak the bone with PVA emulsion, which acts by gravity. The PVA collects beneath to be recycled by pumping back to the top. This methodology is covered by his paper of 1987 in The Geological Curator 4(7): 463-465. PVA is also used as a base for powder paints for painting plaster replicas. Having discussed the value and uses of PVA Adrian concluded by describing some of the problems.

After lunch there were demonstrations by Jenny Smithers of the plant mounting methods used in the NHM Botany department, and Brian Pitkin demonstrated his registration and labelling computer programme. Megan Lyall brought some historical plant specimens from the Botany Department which were mounted on varied types of papers, often with unknown adhesives to demonstrate their variable condition. The final session comprised a "question time" led by the morning's speakers. Boris Pretzel of the Victoria and Albert Museum conservation unit contributed a number of comments to complement the list of requirements for ideal glues provided by Adrian Doyle. Simon Stanyer manned the trade display and handed out bags of goodies at the end of the day, including amongst the paper samples, a heat sensitive advertisement mug comparing the surfaces of the scalps of follicly challenged scientists (much like your reviewer!) with that of "Courier Super Wove". Rob Huxley closed the proceedings by thanking the speakers and Jenny Moore and Janet Margerison Knight who had so ably organised the day.

Doyle, Adrian M. 1987. The Conservation of Sub-fossil Bone. The Geological Curator, 4(7): 463-465.

Pitkin, Brian. 1995. Labelling specimens in the Life Science Departments of the Natural History Museum, London using Computers. The Biology Curator 4: 24-27.

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