2015 Posters Associated with the Preparators' Session

MAKING A PERMANENT BASE FOR A THIN FOSSIL USING EPOXY

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JODA 4771, as collected, was a large block of Clarno Formation, around 42 Ma, with only the hollow enamel of the upper tooth rows of a new brontothere species exposed. A huge amount of very hard rock was oriented over this thin, fragile specimen. As the rock was scribed away and the block got smaller, traditional plaster cradles were used to support it. Eventually, the block became extremely thin, and the plaster cradles were inadequate support. In a few places, the rock was only millimeters thick, and while uncovering the occlusal side of the teeth, a few holes were punched all the way through the matrix. Afraid to proceed any further for fear of losing the dimensions of the palate that had been preserved, it was decided to make a permanent base out of epoxy. Clear epoxy was chosen so the undersides of the teeth were still visible as originally preserved. The challenge then became how to construct the base without getting epoxy on the newly exposed occlusal surfaces. A number of trials were made using clay, carbowax, cyclododecane, and silicone. The best method was using brushable silicone employing a process much like molding the specimen. First, all undercuts and places where silicone could adhere were filled in with clay. Because the finished product is not being used to make a replica, claying can be done liberally without worry of masking the specimen's features. Brushable silicone was applied to the dorsal surface until thick enough and completely set. A temporary clay wall was constructed at the edge of the ventral surface. Then, the brushable silicone was extended up the wall to create a silicone reservoir that was tightly sealed to the fossil. Finally, the clear epoxy was poured into this reservoir to form a solid, level, permanent base. Embedded in its new stable foundation, preparation resumed without fear of the specimen breaking apart.

ARMATURES OLD AND NEW FOR VERTEBRATE FOSSIL MOUNTS IN THE FOSSIL HALLS OF THE NATIONAL MUSEUM OF NATURAL HISTORY

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Armatures for mounting fossil vertebrate specimens in life positions are complex structures and are inherently tied to the strength, stability, and scientific usefulness of a specimen over its period of display. While many nuances of armature design are proprietary to a builder or team of builders, the general design, materials, and appearances of mounting armatures can be grouped into categories useful for their identification and strategizing reverse engineering during the uninstallation of a mount.

Using specimens dismantled during the renovation of the Fossil Halls at the Smithsonian Institution National Museum of Natural History (NMNH) as examples, armature designs are categorized into internal, external, and plaque mounting styles. The structure of armatures is diagrammed across several mounts, forming a useful 'road map' to armature structure of mounts still existing. The advantages and disadvantages of each mounting style in relation to the scientific use of mounted fossils during and after public display are described. Common mount materials including metals, paints and coatings, padding materials, fillers and aesthetic additives, and adhesives are described and the consequences of their use to fossil chemical and physical stability are examined. The presence of hazardous materials in mount structures such as asbestos plaster and lead paint are known from mounts

constructed in particular periods of time, and means of testing for and working with these substances are discussed. Armature designs and materials used in the past are compared with those preferred today, to show a shift towards archival materials and designs that reduce the chance of physical damage to specimens from weight loading, abrasion, and seismic activity.

Included in this presentation are lessons learned from the NMNH vertebrate fossil preparation team during the process of dismantling a number of different types of mounts, including the process of strategizing reverse engineering of mounts and tools useful in mount dismantling. This information can serve as a reference to preparators and exhibit designers when working to remediate issues with old mounts, disassemble old mounts, or design new mounting structures.

DESIGNING A HOLISTIC INTERNSHIP FOR UNDERGRADUATE STUDENTS IN COLLECTIONS CARE

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As workers in curatorial divisions of public trust museums and similar repository organizations, we are charged with the responsibility of caring for objects of primary scientific data, namely vertebrate fossils and their associated records. The tasks of acquiring collections, revealing the morphology of a specimen, applying treatments to a vertebrate fossil, safely storing these specimens, maintaining records for current and future generations, and conveying that information to the public and academic communities for whom they are maintained, requires not only a knowledge of best practices and training, but also practical experience handling and working with collections. For the student aspiring to pursue a career in the field of vertebrate paleontology, such as a preparator, collections manager, curator, or educator, there are generally limited opportunities available to build up the requisite experiential knowledge prior to graduation. Building a holistic internship for undergraduate students requires some thoughtfulness and time on the part of the collections staff so that the experience is mutually beneficial for the student and the needs of the collection. Attention to recruitment, assessment, training, workflow, and evaluation are all important aspects of a well rounded program. A case study will be presented on the building of the Vertebrate Paleontology Internship program at the Natural History Museum of Los Angeles County with reflections on how this model can be adopted by other institutions.

RESTORING A RESTORED RESTORED *TRICERATOPS* '? *BREVICORNUS*' SKULL FROM THE LANCE FORMATION, WYOMING, USA

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In 1956, a skull of the ornithischian dinosaur *Triceratops* crossed the Atlantic, from the Yale Peabody Museum in the USA to the Delft University Geological Museum in the Netherlands, in exchange for an invertebrate fossil collection from the former Dutch colony of Timor.

The skull was originally classified as the 'plesiotype' of *T*. '? *brevicornus*', or simply 'skull 21'. It most likely represents the better part of YPM VP 001832, a skull excavated during the Yale-Hatcher 1891 Cretaceous Expeditions. It was recovered from the 'Ceratopsian locality 21', Lance Formation, near Lightning Creek, Converse County, Wyoming, USA. The specimen comprises most of the skull base, including the majority of the condylar region, sub-orbitals up to the nasal bone rostrally, and the lower jaws.

The fossil was in all likelihood seriously damaged when the shipping crate moved around in the cargo hold of the ship during a storm over the Atlantic Ocean. Perhaps worse, upon unloading the shipment at the Delft Museum, the crate got dropped from the truck. Once unpacked, the museum staff was greeted with a challenge of about 600 pieces. The subsequent repair and restoration work in the Netherlands during the late 1950s left something to be desired, particularly when mapped against more recent reconstructions.

Following the recent merger of multiple collections (including the Delft collection) into the Dutch national natural history museum, Naturalis Biodiversity Center in Leiden, new reconstruction efforts are now under way to restore the specimen. The disassembly of the specimen provided an interesting opportunity to reverse-engineer the approach of various labs, and document a stratigraphy of the materials and methods applied in the excavation and the earlier restorations of the specimen.

PLASTERED: AN EXAMINATION OF UNORTHODOX JACKETING MATERIALS

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Specimen jackets are created with burlap, water, and plaster. During remote field work, however, these ingredients can occasionally be in short supply or absent and decisions need to be made on the viability of removing specimens. Several creative materials have been proposed and executed to supplement any missing supplies keeping with best practice methods. Various cloths; such as cotton/polyester t-shirts, denim jeans, and cotton socks are typically found in abundance in most field camps, but these materials are not suitable replacements for durable, easy-to-use burlap. Liquids, such as sports drinks or beer are familiar in many field packs or coolers; however, when substituted do not form reliable bonds with the plaster. If plaster is in short supply or unavailable, paper towels soaked in consolidant and mud that is impregnated with consolidant can be a safe substitute for a plaster specimen jacket in limited uses. Duct tape does not provide enough support and protection to safely transport specimens back to the lab and is not a viable solution. Since specimen jackets often reach large sizes, a jacket many require support braces made of tree branches, wooden 2 x 4s, or fence posts, although other materials can be used for a support brace when those supplies are not available. This study tests and examines part applications of various ‘quick fix’ solutions, and demonstrates the viability of each material in the creation of plaster specimen jackets to determine which solutions are safe for the fossils during transport, versus when it is better to leave the specimen in the field and return with proper supplies.