GEOLOGICAL CURATOR

Volume 10 Number 9

GEOLOGICAL CURATORS' GROUP

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The Group is affiliated to the Geological Society of London. It was founded in 1974 to improve the status of geology in museums and similar institutions, and to improve the standard of geological curation in general by:

- holding meetings to promote the exchange of information
- providing information and advice on all matters relating to geology in museums
- the surveillance of collections of geological specimens and information with a view to ensuring their wellbeing
- the maintenance of a code of practice for the curation and deployment of collections
- the advancement of the documentation and conservation of geological sites
- initiating and conducting surveys relating to the aims of the Group.

2018 COMMITTEE

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Cover: see Figure 11 in Middleton inside.

THE GEOLOGICAL CURATOR

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EDITORIAL

This issue is rather late, and was originally planned for the second part for 2018. However, the planned first part - a Proceedings 'special' on ethics, derived from two separate meetings - is delayed so the publication order has been switched. The 'Ethics' issue will follow soon, but with so many contributions and pressure of work on this editor, and on Jeff Liston, the guest editor for that issue, it has resulted in unavoidable delays.

The flow of papers on varied topics which makes up a standard mix of a journal issue has been somewhat reduced recently, and many long promised papers are still awaited, as authors struggle for time to complete papers, in what has sadly become a less valued aspect of work in geological collections and museums.

The counterpoint to this is that as seminars, workshops and training courses become more focused in supporting curators, the demand for 'proceedings' style issues has grown. As presently planned, both issues for 2019 will be thematic sets of papers from meetings that GCG has organised. Hopefully, members will find great value in these issues, and it represents one of the ways we can widen the reach of workshops and meetings to those who could not physically attend.

As always, if you have contributions for the journal, short or long, or have views as to its direction we will be pleased to hear from you.

Matthew Parkes

PLANT OR ANIMAL, TERRESTRIAL OR MARINE? THOUGHTS ON SPECIMEN CURATION IN UNIVERSITY PALAEONTOLOGICAL TEACHING COLLECTIONS BASED ON AN EXAMPLE FROM OHIO, USA

by James R. Thomka

Thomka, J.R. 2018. Plant or animal, terrestrial or marine? Thoughts on specimen curation in university palaeontological teaching collections based on an example from Ohio, USA. *The Geological Curator* 10 (9): 517-521.

Palaeontological teaching collections at universities are critical to accurately conveying aspects of palaeobiology and palaeoecology to students who, in turn, may eventually disseminate that information to the general public via a variety of museum-related pathways. Unfortunately, curatorial rigor is often less strongly reinforced in university teaching collections than in museum collections, leading to unlabeled or mislabeled specimens, or specimens grouped into collections with an excessive amount of missing data. Herein I describe one illustrative example of confounding specimen labeling from the palaeontological teaching collections of the University of Akron Department of Geosciences (Akron, Ohio, USA). The studied specimen represents a portion of the distinctive stem of the common Upper Carboniferous sphenopsid plant *Calamites*, but is labeled as the stem of a crinoid (Phylum Echinodermata). Thus, a land plant has been attributed to a portion of a marine invertebrate, a misidentification that transcends not only biological kingdoms but also the continental-marine discrepancy. Aside from major morphological differences between these two organisms, the specimen is preserved in a way that is nearly impossible for crinoid columns but is relatively common for *Calamites*. This find illustrates a major potential source of confusion or misinformation among palaeontology students (and future museum workers) and highlights the significance of scrutiny in teaching collections in addition to museum collections. Individuals working with teaching collections inherited from a predecessor or consisting of organisms with which they are relatively unfamiliar are encouraged to contact a specialist for consultation, identification and correction.

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Introduction

Museum exhibits play a critical role in informing the populace about palaeontology, being unparalleled resources for introducing the general public to the significance of changes in the biosphere through time. The "life blood" of an informative exhibit is the palaeontological collection behind it; further, the results of academic, specimen-based palaeontological research are often constrained by the precision of collection data (e.g., Allmon and Poulton 2000; Allmon 2005). Consequently, proper care and labeling of the specimens comprising organized systematic, stratigraphical, geographical or other collections are vital components of curation (Lieberman and Kaesler 2000). One area where curatorial rigour has, unfortunately, not been consistently emphasized is the realm of collections used for teaching in university-level palaeontology and Earth-history courses. Although some collections observed by the author rival those of major, professionally managed and curated museums (see also Cundiff 2011), others adhere to a more informal, if not chaotic or downright bizarre system. It is difficult to assess exactly how pervasive this problem is among university teaching sets, but my experience suggests that most universities have at least a few drawers in their collections for which little, if any, of the basic information that is often taken for granted in museum collections is available. A more important issue is that even a generally well-documented teaching collection can include an anomalous item or two associated with insufficient or incorrect information. This can lead to discovery of extraordinarily enigmatic and/or grossly mislabeled specimens; an example of one such occurrence is described here.

It is worthwhile to emphasize at the outset that this note is intended not as insult or jest, but as a cautionary tale. A museum's workforce has to be educated in the principles of the discipline(s) being displayed and archived by the museum and, at least among recent generations of museum workers, this training comes largely at the university level. Hence, poor curatorship of collections used to train students in the fundamentals of palaeontology may lead to misidentification or misinterpretation of fossil organisms, leading to propagation of outdated notions or display of significantly inaccurate or even biologically impossible reconstructions (e.g., Donovan 2011a, 2011b).

Material

The specimen described here (Fig. 1A) was discovered without an identifying repository number within a collection of assorted echinoderms treated as an old teaching collection for the Department of Geosciences of the University of Akron (Akron, Ohio, USA). It was immediately obvious that this specimen was not an echinoderm and was, in fact, part of a calamitean sphenopsid, a classic representative of the Upper Carboniferous (Pennsylvanian) terrestrial coal forest flora (Stewart and Rothwell 1993; Cleal and Thomas 1994). This portion of the plant, almost universally called Calamites, is more accurately, though less colloquially, termed *Arthropitys*, in specific reference to the hollow pith in the center of calamitean trunks (Taylor *et al*. 2009; but see DiMichele and Falcon-Lang 2012). The specimen is preserved as an internal mould with a lightly and incompletely carbonized outer residual surface (Fig. 1A). Infilling sediment consists primarily of fine to coarse quartz sand (Fig. 1B). The specimen shows very slight deformation via compaction and displays a graded fill (Fig. 1B), indicating orientation during initial infilling.

A small hand-written paper label was bound to the specimen by a metal wire (Fig. 2). The label reads "crinoid stem", (underlined on label) and beneath this label is written "stem of ancient sea plant". At the bottom of the label is the phrase "Locality?", suggesting that this was a donated specimen rather than something that was directly collected in the field by the repositor. This interpretation is further supported by the use of a metal wire and luggage-style label, which few curators would use, as well as the absence of similarly labeled specimens (purportedly crinoid or otherwise) in the university collection.

All labels appear to be written by the same person, but the placement of the larger, marine plant label in

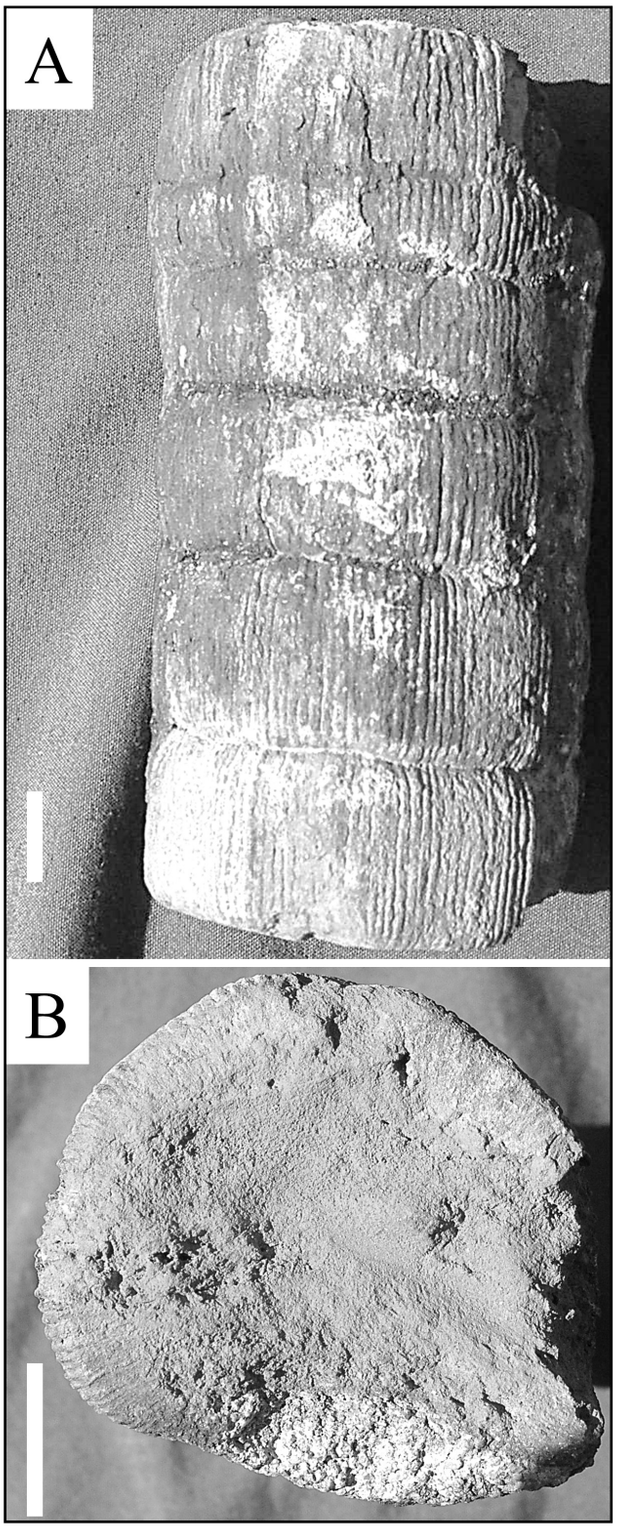

Figure 1. **Calamites** ***specimen from a palaeontological teaching collection of the University of Akron (Akron, Ohio, USA) misidentified as a crinoid stem. No identifying number, location data, collector information or date was associated. A) Lateral view showing prominent ribs, nodes and internodes as well as a partially carbonized outermost surface. B) Cross-section view showing sedimentary composition and graded fill. Scale bars = 10 mm.***

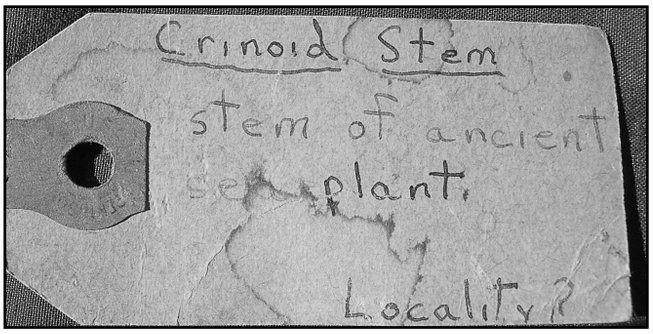

Figure 2. Hand-written label attached to the mid-identified specimen. Note that the position of the identification as the stem of some form of sea plant in the centre of the label implies that it was written before the identification as a crinoid column. The changed interpretation is further supported by the underlining of "crinoid stem." However, it is alternatively possible that both labels were written at the same time, under the notion that crinoids ("sea lilies") were actually land plants

the center of the tag and the crinoid label in the top of the tag suggests that the latter was written after the former (i.e., identification was changed from plant to crinoid), as also suggested by the underlining of the crinoid identification. An alternative interpretation is that both labels were written at the same time by a collector who incorrectly believed that crinoids actually represented a form of plant, perhaps taking the nickname "sea lilies" literally.

Land Plant, not Marine Animal

Numerous morphologic and taphonomic factors discredit both of the identifications on the specimen label. Although both crinoid columns and calamitean stems are composed of stacked segments, the nodes of *Calamites* are significantly taller than the columnals of crinoid stems, even those columnals characterized by increased height relative to most columnals (cf. Moore and Jeffords 1968). Further, calamitacean nodes do not display articulation between subjacent and superjacent internodes: there are external ridges but no articular surfaces in calamitean stems, in contrast to crinoid columnals, which have well-developed, crenulated facets for interlocking with other columnals. Finally, the internal cavity of a calamitacean plant is significantly larger than even the largest canals of crinoid columns. Indeed, the majority of the volume of this specimen consists of sedimentary infill rather than organic material (Fig. 1B). Crinoid column lumina generally occupy less than one third of the diameter of the columnal width (Moore and Jeffords 1968).

There are also consistent and significant differences in preservational pathways between crinoids and calamiteans. Crinoid remains are nearly always preserved as original, recrystallized or diagenetically replaced skeletal material or as moldic impressions within sedimentary rocks (e.g., Donovan 1991; Nebelsick 2004). Preservation of crinoid pluricolumnals not embedded in matrix via infilling by coarse siliciclastic sediment is quite rare. In contrast, the organic (unmineralized) composition of sphenopsids makes this group, in addition to most coal forest plants, readily preserved as internal moulds and/or natural casts in coarse siliciclastic lithologies (Schopf 1975; Taylor *et al.* 2009; DiMichele and Falcon-Lang 2012). The graded infill (Fig. 1B) indicates that the specimen had to be oriented horizontally during an interval when the interior of the fossil was hollow. It is essentially impossible for a crinoid column to be completely hollowed out (via dissolution?) while the latus remained intact. The primarily hollow interior of sphenopsids (i.e., the pith) represents an anatomical feature that is likely to become infilled with sediment following the death and toppling of the stem (e.g., Schopf 1975). Again, the organic material surrounding the infilled interior would have completely decayed, leaving an internal mold separated from sedimentary matrix.

Discussion

It is not unusual for specimens with grossly erroneous labels to be discovered and corrected in museum, university and private fossil collections of any size. For example, Donovan and Miller (2016) recently described the terminal dendritic attachment structure of a crinoid from Canada that had been misidentified for some time as a rugose coral (Phylum Cnidaria). In a grander sense, much of the history of palaeontology as a science is rooted in significant changes in the identification and interpretation of important fossil specimens (see, e.g., Rudwick 1985). Nevertheless, the specimen described in this study is worthy of comment because of its value as a modern cautionary tale. If identification of one of the most well-known Palaeozoic land plants as arguably the most common Palaeozoic marine macroinvertebrate can go unnoticed, then careful scrutiny of university teaching collections is as important a task for palaeontologists with access to such collections as it has ever been. This will benefit students-and potential museum workers.

For those directly involved with teaching collections used in university courses, caution is urged with fossil collections that are inherited from predecessors. Teaching sets should be checked regularly and the information on labels added or updated. If the fossils represent organisms with which the caretaker of the collection are relatively unfamiliar, then it is worthwhile to contact a specialist on that group and invite

them to examine the collection and point out any misidentifications, omissions and/or necessary taxonomic revisions. If new material is collected in the field or received from a donor, then relevant information on location, stratigraphical setting, date and collector/donor should be recorded before specimens become incorporated into teaching collection sets.

Finally, the total absence of provenance data for the problematically labelled material highlights the difference between carefully documented specimens in modern museum collections and those that commonly occupy the shelves of university teaching collections. Some excellent guidelines have been established for the curation and management of invertebrate palaeontology collections (e.g., White and Allmon 2000; Adrain *et al.* 2006) and palaeontologists working for universities (and their students) will benefit greatly from employing at least some of these practices. Although accepting donated material is undoubtedly valuable to the scientific objectives of both museums and universities, the standards for documentation of specimens should be equally stringent; in particular, it should be made overtly clear which labels were inherited from the donor and which were subsequently applied by a curator. With consistent and thorough documentation, specimens that are as bafflingly labelled, and consequently wildly misidentified, as the one described here will become a rarity within university teaching collections.

Acknowledgements

Assistance with the palaeontology teaching collection was provided by Zac Strong (University of Akron). The constructive reviews by Patrick Wyse Jackson (Trinity College Dublin) and Andrew Peter Sims (Merlin Energy Resources) improved a previous version of this note. Submission of this paper was inspired by an invited editorial column in *The Geological Curator* by Stephen K. Donovan (Naturalis Biodiversity Center, Leiden).

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DOMESTIC SCIENCE:
THE RECOVERY OF AN ICHTHYOSAUR SKULL

by Heather Middleton

Middleton, H. 2018. Domestic Science: the recovery of an ichthyosaur skull. *The Geological Curator* 10 (9): 523-530.

In May 2016, Andrew Wass and the author recovered much of an ichthyosaur (ophthalmosaurid) skull from the foreshore of Smallmouth Sands in Weymouth, Dorset, UK. This provided an opportunity to explore the reconstruction of the skull and look into the scientific study of ichthyosaurs. Neither of us are affiliated with any university or museum and this article shows the use of improvisation or educated guess work, facilitated by the internet age of available information; it illustrates 'exploratory' research in the time-honoured tradition of independent local experts.

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Introduction

The Kimmeridge Clay Formation has yielded many fossils, representing an entire ecosystem, from apex predators such as pliosaurs to a wide variety of ammonites. It has been regarded as the most intensively studied formation in Britain (Gallois 2004). This may well be because of its importance to the oil industry. Steve Etches remarks in his book 'Life in Jurassic Seas', that he chose to focus on the Kimmeridge Clay because the fossils were under-recorded and under-researched. This author (HM) also noted a gap in fossil collection for crocodylomorph specimens from the Kimmeridgian (Young, Steel and Middleton 2013). When a research gap is noted and a local site is available, fossil collection can take a specific direction.

Smallmouth Sands has been well known to fossil collectors for 200 years. Its vertebrate fauna includes turtles, pterosaurs, crocodiles, dinosaurs, ichthyosaurs, plesiosaurs and pliosaurs (World Heritage Site Management Plan 2010; 'Fossils and Reptiles of Great Britain' 1995). A very rare find from this site, a dinosaur humerus, was made by R.I. Smith, and later described and donated to the Natural History Museum (NHMUK) (Hulke 1874). This has been reclassified recently as a new sauropod *Duriatitan humerochristatus* (Barrett, Benson and Upchurch, 2010) and features in the book 'Dinosaurs of the British Isles' (Lomax and Tamura 2014).

Our own focus is on marine reptiles in the Cymodoce Zone of the Lower Kimmeridge Clay Formation where A.W has collected since childhood and H.M since 2010. H.M has a degree in Natural Sciences including Geology. Imagine the excitement of seeing the tip of an ichthyosaur rostrum lying *in-situ*. There have been rare *in-situ* specimens found over the last 200 years but this was a first for us. Considering that fragmentary remains of ichthyosaurs are relatively common, we felt it was a chance to develop our own skills. Setting about the challenge from my kitchen using materials to hand and, of course seeking expert advice, this account reports our reconstruction of the ichthyosaur skull.

Locality

Smallmouth Sands, Weymouth, Dorset.
Grid reference SY669765-SY672772
GCR site 1298
Horizon. Wyke Siltstone, Dorset succession, Lower Kimmeridge Clay Formation
Rasenia cymodoce Sub-Boreal ammonite zone. Bed KC5 (Cox and Gallois 1981)

The Rescue

In May 2016 the author found the tip of an ichthyosaur rostrum eroding from the foreshore at Smallmouth Sands. An assessment of the specimen revealed that a partial skull might be present. With no appropriate equipment to hand, improvisation was necessary, otherwise the specimen could be swept away with the next tide. Using on-site flotsam, hard plastic to excavate, plastic bags and gloves to wrap up discrete portions, and bits of flat wood to act as splints to keep fractured pieces in order, HM transported the specimen home. Mobile phone photographs recorded the relative positions and were later annotated. (Figure 1).

Figure 1. the rostral tip in-situ taken from my mobile phone.

Once home, the author was filled with a sense of dread: I was responsible for this 153 million year old fossil and would I ever be able to reassemble it from clumps of mud? The mud was washed off gently and the pieces of bone, including some minute shards, were placed in pyrex dishes on the kitchen table. They were soaked for a week in tap water, refreshed daily, to remove the salt (Figure 2). Then they were gently cleaned with a toothbrush and scraped with dental tools. Preferring to err on the side of caution, some substrate was left on the bone, particularly on the alveolar groove, to give strength. A record was kept by drawing all the bone pieces, numbering them on the drawing, and keeping the numbers relevant to their position *in-situ* (Figure 3). It proved that this find resembled others from this site, with superb 3D preservation, no crushing, little or no pyrite and little wear. The bone surface was cream coloured and the interior a fine-grained dark brown. There were some predation marks: scratches on the right nasal (Figure 9).

A sample of the associated bivalves (*Palaeonucula menkii*) was kept. The carcass had suffered some twisting during decomposition, but before burial and preservation (Figure 4). My colleague, Andrew Wass, found more pieces of the skull during the first week. More pieces turned up over the subsequent year, having been rolled up the foreshore towards the mudstone cliff. Andrew found 10% of the skull including vital pieces, such as both tips of the pre-maxillae, parts of the eye orbit and the opisthotic bone in March 2017.

Figure 2. The premaxillae soaking in a pyrex dish of tap water, aligned but not glued.

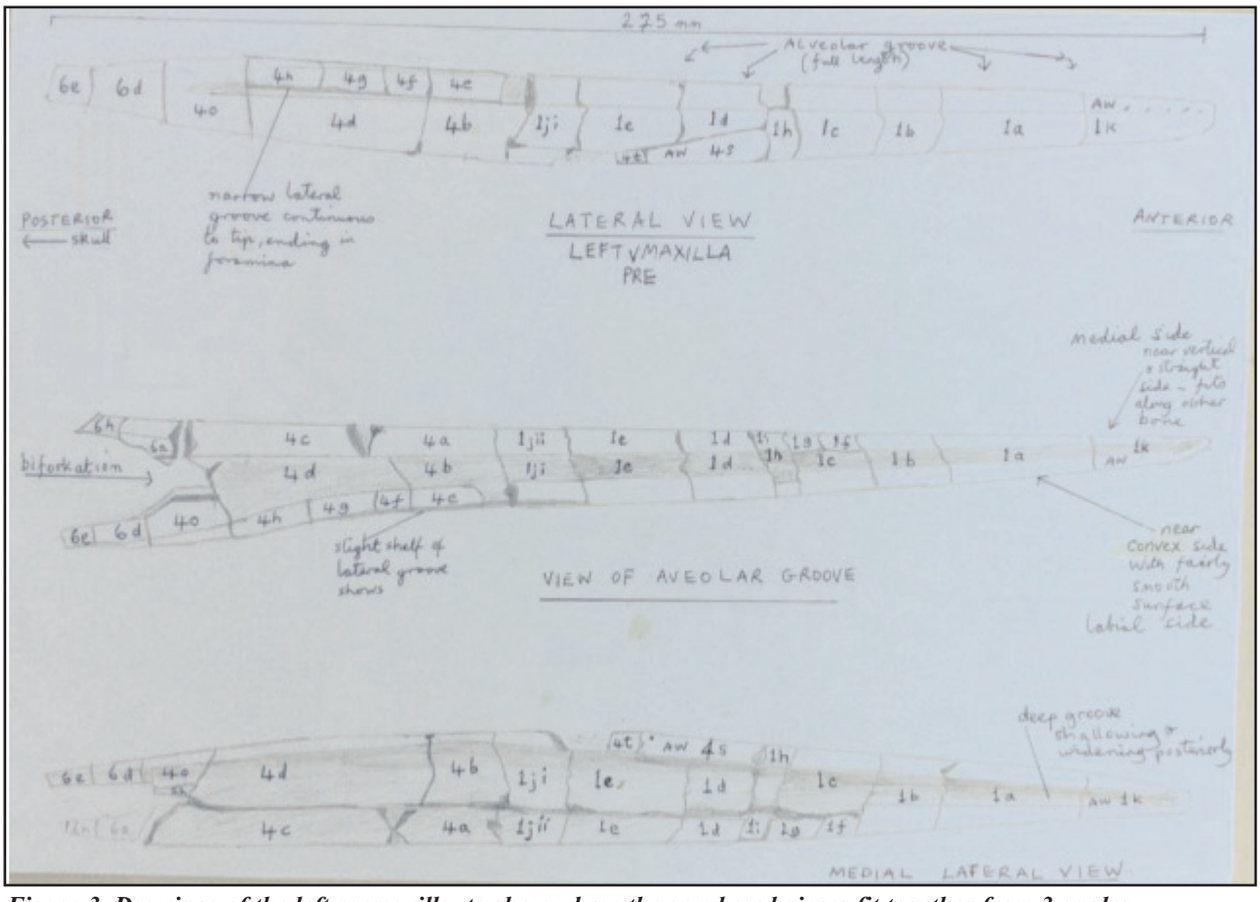

Figure 3. Drawings of the left premaxilla to show where the numbered pieces fit together from 3 angles.
Figure 4. Annotated photograph of the in-situ find showing notes on twisting during deposition, and numbers assigned to bone pieces with their relevant positions

The Jigsaw Puzzle

Despite my fears, it was not a problem reassembling the skull. The broken pieces usually fitted together exactly, with no room for any other possibility; a profoundly amazing jigsaw. A photographic record of many of the cross-sections was made before glueing two pieces together (Figures 5 - 8). My problem was learning how to use paraloid B72. Advice from Mark Graham led me to experiment with different strengths of acetone to beads in old fishpaste glass jars. I set up a sand-tray in a plastic tupperware box to support the bone while the glue hardened. Some glueing had to be repeated many times. Much patience was required and a determination to continue until I was satisfied with the result. This was weeks of work.

The Bigger Picture

It became evident that some larger pieces of the skull fitted into each other: the V shape of the nasals into the top of the premaxilla (Figure 9); the anterior maxilla into the premaxilla alveolar groove. To

Figure 5. Enlargement of the cross-section of the pre-maxilla, 60mm back from the tip, showing clay infill marking the connection between the lateral groove and the intraosseous canal.

Figure 6. Detail of the cross-section (at 4n on Figure 7) of the maxilla and lacrimal. The far right piece fits to the upper left part. In the middle there appear to be separate bones abutting.

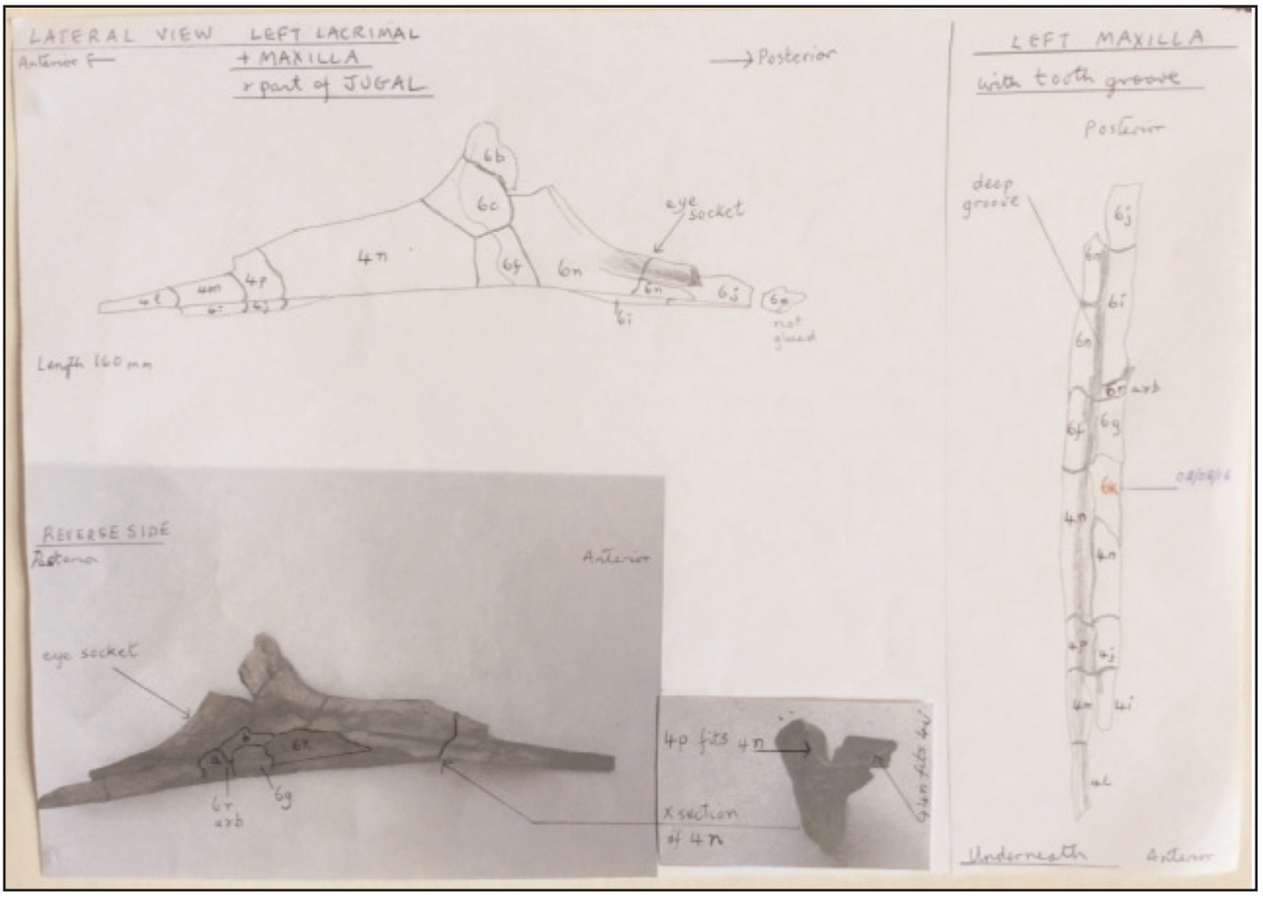

Figure 7. Drawings of the numbered pieces for assembling the left maxilla, lacrimal and jugal

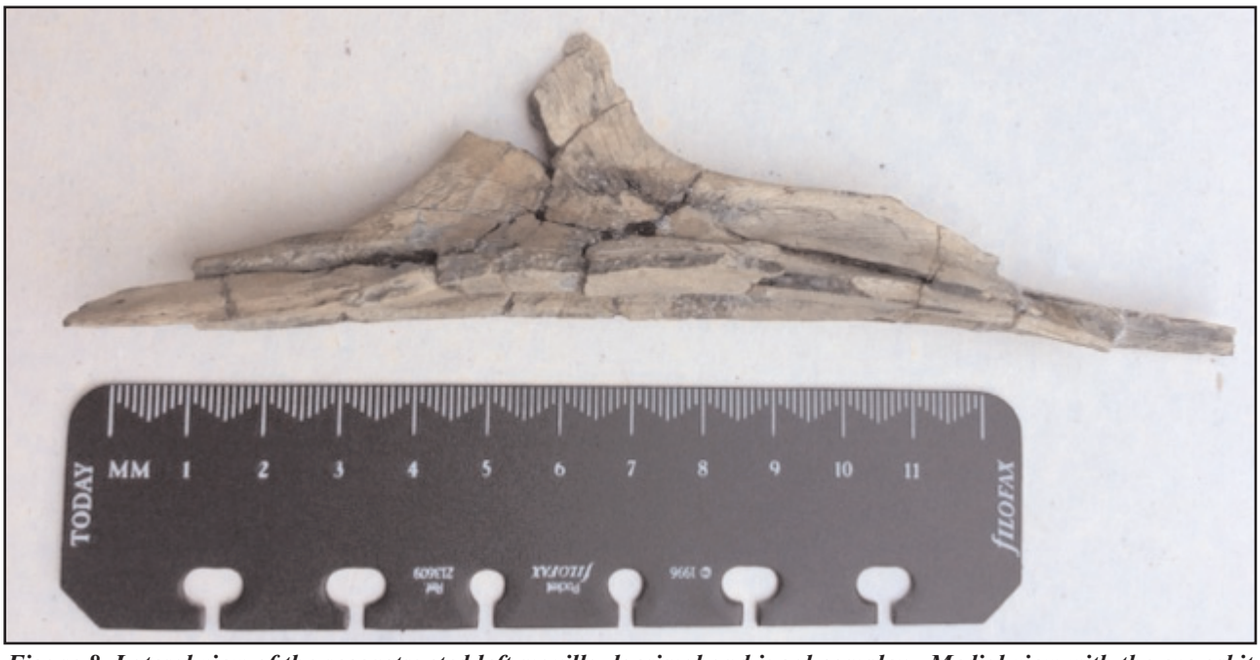

Figure 8. Lateral view of the reconstructed left maxilla, lacrimal and jugal complex. Medial view with the eye orbit rim left and the edge of the naris right.

start with I had no idea of the names of the bones. I wrongly presumed the rostral tip was the dentary, and that preservation had occurred without twisting right and left. On-line ichthyosaur papers were consulted. The first real progress in identifying bones came from a paper about the digital reconstruction of an ichthyosaur skull (Marek *et al.* 2015). The written descriptions were detailed although the digital imagery is not accurate enough to identify skull bones with any confidence. The easiest paper to identify skull bones from was an unpublished dissertation with specific reference to *Ophthalmosaurus icenicus* (Kirton 1983) which contained clear drawings. The monograph on *Ophthalmosaurus icenicus* (Moon and Kirton 2016) further clarified the structure.

Another avenue of research was to consult local experts. The Steve Etches Museum of Jurassic Marine Life has several ichthyosaurs on display. Steve had found the fore-fin of *Ophthalmosaurus* at Smallmouth Sands, specimen K292. Steve Etches and Paul de la Salle came to view our specimen and help with identification. Other museums were visited to examine ichthyosaurs for comparison, including the Oxford University Natural History Museum and the Natural History Museum in London. This was another very lengthy process. Photographs were emailed to various experts and their replies were very helpful. However identification from photographs is not ideal. Identifying skull bones takes patience and determination, gleaning knowledge from often confusing information. The task is not completed either. It is a theoretical type of jigsaw.

Figure 9. Top view showing how the nasals fit into the V shaped space of the premaxillae.

Display

My objective was to display the reconstructed skull so as it could be dismantled easily for examination in 3D. The chief scientific value may lie in the 3D preservation. Most ichthyosaur skulls on display are embedded in a matrix. Many are augmented with plaster cast pieces or are made up from several individuals. I wished to present the skull in such a way that it was easy to identify the obvious parts of an ichthyosaur head so I have painted cardboard eyes and nares. I purchased a glass cabinet of the correct size at a local bric-a-brac shop. Aquarium fish gravel was used for the base as I had seen in some German museums and thought it a good idea. Gravel can also be built up higher by enclosing it in an old piece of tights. I used fine 34 gauge beading craft wire to secure the main bones to a largely hidden moulded support. This support was made from a thermoplastic polymorph. It is relatively easy to mould and can be pressed directly onto the bone giving bespoke support. Any visible polymorph is disguised by painting it grey with acrylic paint. I have by no means mastered these display techniques but found it interesting work (Figures 10-11).

Figure 10. Side view of the reconstructed skull, resting on the base of gravel, but without the glass top of the display case. Total length from tip of snout to jugal under the eye 340mm.

Figure 11. Close up up the eye and naris area, showing cardboard painted features, craft wire, polymorph mould, gravel and wire used to support the skull.

Conclusions

It has taken eighteen months to reach the point of writing a report on the partial ichthyosaur skull. Preliminary identification suggestions that it is a juvenile *Ophthalmosaurus icenicus* skull. The criterion for suggesting a juvenile is primarily its size, 340mm. The skull bones are separate, unfused, (Figure 6) though I have never seen another example for comparison. At the Museum of Jurassic Life, Steve has several genera of Kimmeridgian ichthyosaurs. *Brachypterygius* is very large and has big teeth, which are also found at Smallmouth. However the teeth found near, but not definitely associated with the Smallmouth Sands skull, are medium sized; their diameter would fit the alveolar groove (Figure 9). *Nannopterygius* and other ichthyosaurs currently under research are different again. *Ophthalmosaurus* seems the most likely identification. Some of the narial margin is present and this may be diagnostic (Figure 11). However this report is only the start of study and by no means the conclusive identification.

The Smallmouth Sands specimen may well be the only example of 3D preservation in the Lower Kimmeridge Clay Formation in the UK. There is still work to be done: to identify the bones from the posterior skull (8 large pieces); to reconstruct the back of the skull; to investigate the opisthotic (Figure 12) and explain the post mortem twisting and scavenging. My chief objective is always to maximise the scientific value of a specimen, hence writing this report. I am a domestic scientist! Without the backing of any institution it is possible for independent fossilists to have a great experience preparing and studying a find (Figure 13). The specimen would be donated to an institution if that is appropriate.

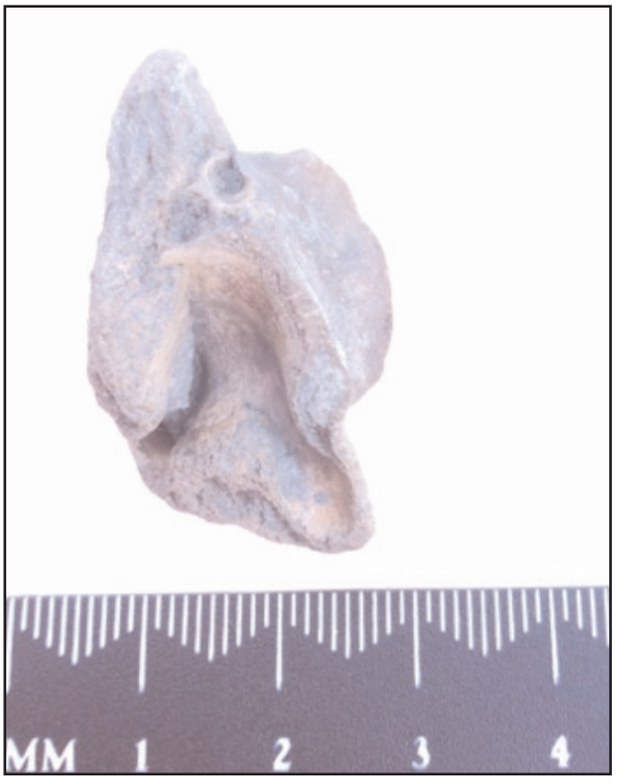

Figure 12. Detail of the opisthotic bone with semicircular canals of the inner ear.

Figure 13. Some tools of the trade.

Acknowledgements

Thank you Andrew Wass for generously donating many pieces of the skull. Thank you Mark Graham (Natural History Museum, U.K) for advice and tips for reconstructing the skull and to Noel Morris (NHMUK) for the ammonite identification. Thanks to Steve Etches and Paul de la Salle for information and to the Museum of Jurassic Marine Life, Kimmeridge Dorset. Thank you to Dean Lomax (University of Manchester), Judy Massare (State University of New York, Brockport) and Ryosuke Motani (University College Davis, California) for responding to my emails and photographs with helpful information about the specimen. For more general ideas, thanks to Ava Pendred, Kieran Miles (NHMUK) Davide Foffa (University of Edinburgh) the Oxford Clay Working Group and the Oxford University Natural History Museum. Thanks Joseph Adjare for I.T help. Last, but by no means least, thanks to Dean Lomax for reading and making suggestions about the presentation of this paper.

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ALEXANDER MURRAY COCKBURN, CURATOR OF THE MUSEUM OF GEOLOGY AT EDINBURGH UNIVERSITY

by Peder Aspen

Aspen, P. 2018. Alexander Murray Cockburn, Curator of the Museum of Geology at Edinburgh University. *The Geological Curator* 10 (9): 531-533.

A short biographical account of Dr. Alexander Murray Cockburn (1902-59), first Curator of the Museum of Geology at Edinburgh University from 1933-59 is given here, together with a note on his main contributions to the geological sciences.

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Introduction

In 1871 Archibald Geikie was appointed as the first Professor of Geology at Edinburgh University and Edinburgh University Calendar records that by 1873 he had "*set up a museum for the teaching of geology*". In the 1920's many of the sciences moved out to a new campus in the south of Edinburgh at the King's Buildings. Geology moved to the Grant Institute there and Dr. Cockburn was responsible for the setting up of the Departmental Museum, which today still bears his name as the Cockburn Museum of Geology.

History

Alexander Murray Cockburn (AMC) was born in 1902 to Alexander Welsh Cockburn and his wife Rosina in Edinburgh. Cockburn senior was a partner in the civil engineering company of Menzies & Cockburn with prestigious offices in York Place, Edinburgh and Alexander junior may well have been influenced enough by his father's profession to enroll as a student of geology at Edinburgh University in 1921 and later to graduate with First Class Honours in October 1924.

Figure 1. A caricature of Dr. Cockburn by an unknown artist (NMS).

Figure 2. A formal portrait of Dr. Cockburn, taken in later life (Edin. Univ.).

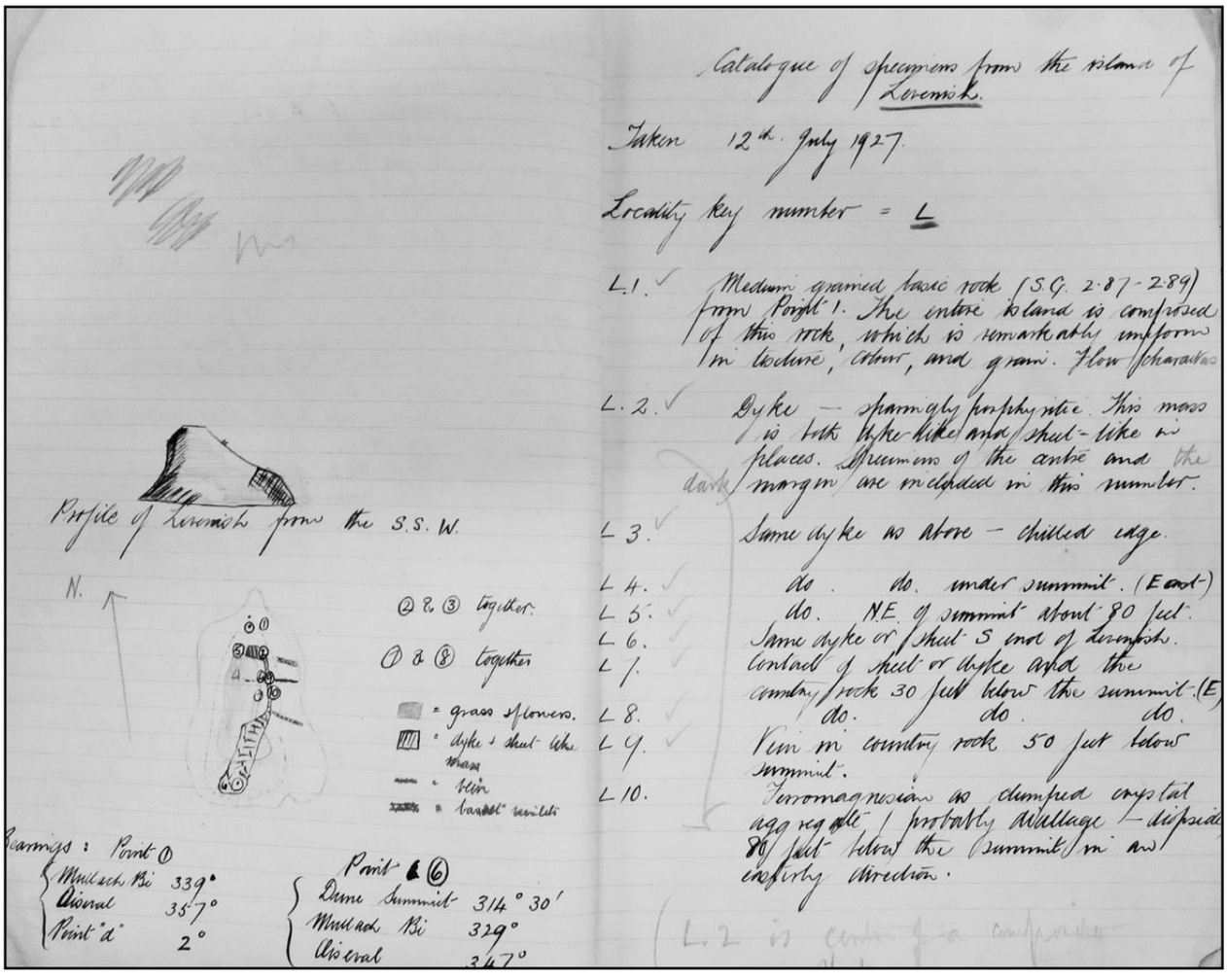

Figure 3. A page from Dr. Cockburn's 1927 notebook on Levenish, St. Kilda Group (NMS).

Soon after graduation he sailed from Glasgow to Montreal and by the end of October 1924, AMC had left from San Francisco, bound for Honolulu in the Hawaiian Islands, where he explored the active volcanoes for 5 months. He then returned from Honolulu to Vancouver in March 1925 and then spent 7 months with the Geological Survey of Canada, before returning to continue his studies at Edinburgh University as a Falconer Fellow in Geology.

During the summers of 1927 & 28, AMC undertook to assist the renowned Ordnance Survey cartographer John Mathieson (Gittings and Munro 1995) in the first topographic survey of the remote St. Kilda Group of islands, which lie some 300 km., W of the Highland Region capital of Inverness. These islands are the most westerly outcrops of the British Tertiary Volcanic Province and consist of a "mainland" Hirta (St. Kilda), with the other islands of Soay, Boreray and Dun together with the pinnacles of Stac an Armin, Stac Lee and Levenish, all in decreasing size. The islands are very steep-sided and extremely difficult to access, especially from a boat in rough seas. However, whilst there, AMC not only assisted Mathieson, but also collected over 1,000 geological specimens which formed the basis of his Ph.D. thesis (Cockburn 1929) and which also resulted in a major paper in the Transactions of the Royal Society of Edinburgh (Cockburn 1933). He also found time to photograph the last inhabitants of these remote islands before they were evacuated in 1930. At that time AMC was 25 years old and Mathieson was 72; they must have formed an incongruous pair!

After the physical and intellectual efforts of the St. Kilda work AMC settled down to his teaching duties, along with involvement in the University Senate and as a Director of Studies. However his real interest was in the museum which now bears his name and he lavished a great deal of time on it, especially on displaying the large Currie Mineral Collection (McCay 2018). These displays were still there when I became Curator of the Cockburn Museum in 1972, but sadly, I never knew Dr. Cockburn, as he died in 1959 (*obit*. Stewart 1959). However, older colleagues who were taught by him remember his dapper appearance and ever helpful, smiling nature.

Figure 4. The Cockburn Museum of Geology about 1960 (Edin. Univ.).

Acknowledgements

I wish to thank Dr. Rachel Walcott, Principal Curator of Earth Systems at the National Museums of Scotland for encouraging me to work on Dr. Cockburn's St. Kilda Collection and also Dr. Gillian McKay at the Cockburn Museum, Edinburgh University for help with information and photographs. All photographs came from the Collections Research Centre at Edinburgh University Library and are copyright.

All Dr. Cockburn's St. Kilda specimens, thin sections and manuscript materials are housed in the National Museums of Scotland's Collection Centre at Granton, Edinburgh. These specimens have been re-catalogued and annotated, in both printed and digital formats, by me, using AMC's original numbers, to facilitate any further studies.

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PRESENTATION OF THE A.G. BRIGHTON MEDAL TO GRAHAM WORTON, NOVEMBER 2017

Every three years it is the pleasurable duty of the outgoing GCG Chairman to award the Brighton Medal to a deserving geological curator. This award was set up in memory of Bertie Brighton, Curator of the Sedgwick Museum who through his lifetime catalogued over 375,000 specimens at a rate of over 10,000 per year. Despite this and his inspirational teaching to Cambridge undergraduates, his work went almost unnoticed other than to those who worked closely with him (Price 1989). I am very happy to announce that my choice for award goes to Graham Worton of Dudley Museum.

Graham has been associated with Dudley Museum for over 35 years, firstly as a volunteer, as a professional geologist and as Keeper of Geology for the last 17 years. More recently he has combined this role with that of museum manager and lead on the Global Geopark project. Many of you will know that recently Dudley Museum closed its doors due to council cuts. Graham has been instrumental in seeking alternative accommodation for the collections and the Geopark Headquarters on the upper floor of a new archive building in Dudley that opened in September 2017. I have been so impressed with the way that Graham has gone about this, never once complaining about the situation but negotiating the best possible situation in a cheerful and positive manner and outlining the benefits of the museum and geoheritage to Dudley and several other neighbouring councils.

By example or by teaching, inspired others to the better care of geological specimens

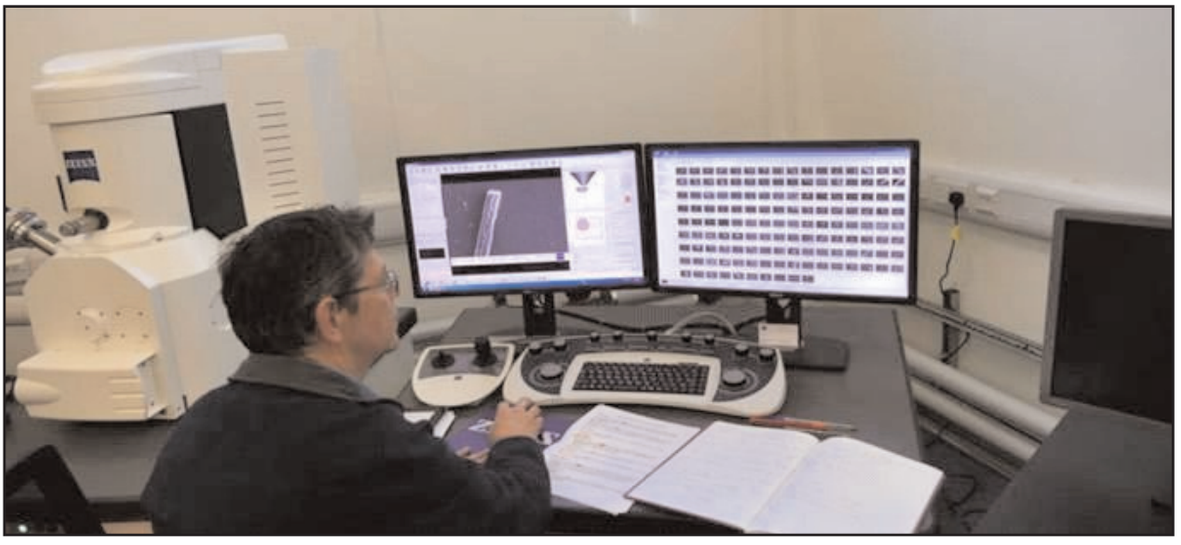
Graham describes his work at Dudley Museum as "a unique opportunity to explore how to weave the geological heritage and collections into an amazing array of projects" and he has certainly been enormously successful in this.

He has held museum fun days encouraging individuals to bring objects to the museum for identification and has set up and run successful, large rock and fossil shows. His arts project 'Wrosne' based around Wrens Nest and Castle Hill and rooted in the communities of the challenged council estates surrounding them has touched locals using stories from museum collections and local sites to provide inspiration, hope and new direction.

His work within the museum has created small static, temporary and travelling exhibitions, and he has advocated the local geoheritage and collections to schools, colleges and universities. I had first-hand experience of Graham's inspirational teaching when I followed his talk at the Houses Parliament launch of the English Geodiversity Charter. He captured the imagination of the audience of MPs and policy makers with an extremely eloquent and engaging talk about how geology is indelibly engrained into local heritage.

Furthering the documentation and conservation of geological sites

When the GCG visited Dudley for our AGM meeting in 2014 Graham led us on a canal tour of the limestone caves deep inside the Wenlock Limestone that forms the backbone of the area. Graham was instrumental in raising the profile of these caves and their relevance to the local area so that they could be opened up to the public. He regularly provides geological details in the planning and development con-



trol process for local projects. He is currently in the closing stages of an application to UNESCO for Global Geopark Status for the Black Country, a project that is drawing together many teams and individuals (http://www.blackcountrygeopark.org.uk/). This could enormously boost the Black Country visitor economy and positively impact the lives of those who live and work in the region. Graham has also been part of regional and national geoconservation programmes. I have heard his name mentioned regularly at Geological Society Geoconservation and Geodiversity Committee meetings at the Geological Society during my time as GCG Chair.

Fostered an increased awareness of the value of geological collections, through collections based research

Finally I would like to mention Graham's published research on collections, geoconservation and local geology. My own research and collections background is in micropalaeontology of the Palaeozoic and Graham has also followed these areas, setting up collaborations that will continue for many years. I was particularly interested to see that Graham has an on-line resource extolling the virtues of microfossils! http://geologymatters.org.uk/2011/01/06/microfossils/

His publications include the subjects: U-Pb (zircon) age constraints on the timing and duration of Wenlock (Silurian) paleocommunity collapse and recovery during the "Big Crisis", Upper Wenlock bentonites from Wren's Nest Hill, Dudley: comparisons with prominent bentonites along Wenlock Edge, Shropshire, England, Local communities and young people - the future of geoconservation and A historical perspective on local communities and geological conservation. I was asked this year to review a paper that was subsequently published in *Palaeontology* on Stratigraphic biases: conodont diversity in the Homerian (Silurian) of the Midland Platform, England.

After I phoned Graham to say that I was presenting him with this award he sent me an e-mail in which he wrote, "For me anyway this is not just a personal passion, it's one that must be shared and extended out from our store rooms and the rock faces of our geological sites and attractions into people's hearts and minds." This sums up why Graham is my choice as recipient of the 2016 Brighton Medal. Many congratulations and keep up the good work Graham!

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G. J. Worton and D. C. Ray 2011b. The Seven Sisters Mine entrances, Much Wenlock Limestone Formation, Wrens Nest Hill, Dudley. *In* J.R. Davies, A. T. Thomas, D.K. Loydell, L. Cherns, B.D. Cramer and S.J. Veevers (eds). *Siluria Revisited: a Field Guide: International Subcommission on Silurian Stratigraphy, Field Meeting 2011*. 170pp.

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GEOLOGICAL CURATORS' GROUP

43rd Annual General Meeting

43rd Annual General Meeting of the Geological Curators' Group.
M Shed, Princes Wharf, Bristol.
9th December 2016.

1. Apologies for absence.
Alex Peaker, Helen Kerbey, Matthew Parkes, Tom Sharpe, Mick Stanley, Sue Turner.

2. Acceptance of the minutes of the 42nd AGM held at the Natural History Museum, London.
Agreed. Proposed: Emma Bernard, Seconded: Cindy Howells.

3. Matters arising.
No matters raised.

4. Chairman's report [Giles Miller].
Circulated.

4.1. Committee.
Giles Miller thanked the GCG Committee for their hard work over the last three years, with special thanks to those who are stepping down after long periods on Committee. John Nudds has been on committee almost continuously since 1989 as Recorder, Chairman and for the last ten years as Treasurer. Hannah Chalk has been on committee since 2009 and has been our webmaster since the post was created in 2011.

4.2. Subject Specialist Networks.
We were again unsuccessful in a joint application with NatSCA to the Arts Council England resilience Fund. The exercise has strengthened links between GCG and NatSCA in what can only be a positive way. The application was to provide support for non-specialists by creating on-line resources. The long-term GCG project of republishing the Guidelines for geological Curation fits well with this and is something Matthew Parkes wants to take further during his Chairmanship.

4.3. Geological Society.
Our relationship with the Geological Society is unique and gives us a firm identity as a subject specialist network. I would like to thank our Geological Society rep. Sally Thompson particularly for her help in developing links between the groups over the past year. We have applied to the Geological Society Specialist Group Activity Fund but are still waiting to hear the outcome.

4.4. Museums around the country.
I'd like to highlight three success stories. Firstly the Etches Collection, a new museum opened this year at Kimmeridge featuring the collection of long time GCG member Steve Etches. Secondly, I have been closely following the progress at Ludlow Museum and Resource centre this year, both as Chair of GCG and as NHM representative overseeing the £250,000 Libor fund grant that they received. It has also been great to see the new Lapworth Redevelopment open.

4.5. GCG meetings.
Our policy of choosing engaging subjects for our AGM meeting, holding them in accessible locations and the booking of one or two key invited speakers to help pre-advertisement seems to be bearing fruit. We have had a steady rise in the numbers of members attending AGM meetings over the last three years. Having three Programme Secretaries in three years has hampered our aim of planning at least a year in advance. I hope that in the future we can have some stability and arrange meetings with other groups such as HOGG and NatSCA as well as provide details of our programmes well in advance. If you have any ideas of engaging subjects for workshops or AGMs then please let us know.

4.6. Outreach.
Our "Be a Curator" stand has been used at Lyme Regis and Scarborough Fossil Festivals this year. Thank you to Emma Bernard and Luanne Meehitiya for co-ordinating things at Lyme and Simon Harris for working at Scarborough. It costs GCG to run these activities and final delivery is dependent on the support of members who are also thanked for helping out with these festivals. We applied unsuccessfully to the Palaeontological Association for money to develop this activity and hope the GA can help us out in the future. We have advertised to see if other institutions or groups would like to borrow the activity for outreach events. A short article describing the activity will appear in the journal soon.

4.7. Electronic outreach.
The Committee has been working on a set of criteria that we would like to see implemented in our new website. Simon Harris will be leading on the redevelopment of the site from the New Year. We have gone electronic with the journal this year. Paper versions of both Coprolite and Geological Curator

are still available on request. I'd like to ask members to think carefully if they need paper copies as postage and printing costs are rising. I'd like to thank Matthew Parkes for developing the electronic version of the journal. Finally, I'd like to thank Emma Bernard for all her hard work on maintaining our Twitter and Facebook feeds. We have around 800 Twitter followers and if you don't already follow us on either of these forums then please consider it. It's a great way to keep in touch and to engage with a wider audience.

5. Secretary's Report [Sarah King].
Circulated.
5.1. GCG to the future
In the light of updated guidance from the Charity Commission I have been looking into reviewing how we operate to ensure that we are meeting our objectives as fully as we can. In particular, I hope to be able use the new advice on charity reserves to inform on future planning. We may also be able to clarify our position by adjusting the Constitution.
We will look at invigorating the organisation over the next year, and you may notice a few tweeks coming in. As a member organisation, we exist to serve our members, for the good of geological collections in all forms. If you have any comments or suggestions at any time, please get in touch with me or any member of the committee. We have already committed to a website redesign, and hope to make it easier to use.

5.2. Matters arising.
We were asked to support the Progressive Palaeontology meeting in Leicester in May 2017, and we offered a sum of £1000. We hope to provide some inserts for conference packs.

Over the past year we have been asked to pass on details of three separate sets of journals offered for donation: the Zoological Record (Sue Lynam of Baldwin's Scientific Books), Tertiary Research (Luanne Meehitya of Birmingham Museums Trust), and a range of journals from Scotland and the north of England (Bill George, Essex Field Club).

5.3. JISCmail.
There are currently 276 members on the GEO-CURATORS mailing list. This is separate from our membership list, as anyone can join it, but there is a huge amount of overlap.

Giles Miller noted that GCG aim to revise the S P Tunnicliff "Note of advice" paper on research and geological specimens" (NERC June 1983).

6. Treasurer's Report [John Nudds].
This is (hopefully) my last Treasurer's Report, having been in this post for 10 years, and having been on committee as Recorder, Chairman and Treasurer (with only one small gap) since 1989. I think you will agree that I deserve a break.

Committee voted last year to increase subscription rates, the first such rise during my time as treasurer, since our annual balance was beginning to fall*. Happily, now, our balance is much healthier, and I hope that we can go another decade before we need to make a further increase. Prudent accounting is the key.
*Year end accounts since 2006 (not including JISC money):*See table at bottom of page*

Subscription income this year has thus increased significantly, workshop income has more than covered our workshop expenditure, and Gift Aid is on a par with recent years.

Expenditure was gratifyingly down on the previous year especially in relation to committee expenses, which is good to see, although this is mainly a result of our having had a number of London-based committee members this year. Most of the remaining JISC money has now been spent, with just £316.87 left in the GCG accounts; this will most probably be used to fund our attendance at the Lyme Regis Fossil Festival next year.

Since closing these accounts I have taken advantage of the favourable post-Brexit US$ rates, and have transferred £2,500 (c. US$3,300; rate $1.31-£1) from the US account to this Sterling account.

Thanks to Tiffany Adrain for assistance with this transfer, and to Caroline Buttler and Christian Baars (NMW) for their careful auditing of the accounts.

J.R. Nudds, Treasurer. 14/11/2016.

2006 - £6,258	2010 - £10,875	2104 - £8,270
2007 - £8,628	2011 - £10, 681	2015 - £9,140
2008 - £10,924	2012 - £11,024	2016 – £11,106
2009 - £11,202	2013 - £10,972	

2016 Accounts 14/11/15 - 14/11/2016.

Income			**Expenditure**	
Subscriptions	£4,867.45	(3,635.46)	Geol Curator 10.4, 10.5	£1,870.00
(1,635.00)				
Working income	£980.00	(1,518.25)	Coprolite 78, 79	£621.00
(841.00)				
Gift Aid	£499.92	(598.72)	Workshop expenses	£810.26
(578.78)				
Uncashed cheques	£55.85		Committee expenses	£916.15
(1,207.72)				
			Web site fees	£100.03
(95.98)				
			JISC GB/3D payments	£463.56
(1,376.78)				
			Prog Pal 2017 sponsorship	£100.00
			Error on last accounts	£20.00
	£6,403.22			£4,901.00
Balance: 14/11/2015	**£9,921.06**		**Balance: 14/11/2016**	**£11,423.28**

American account: $3,315.42
European account: □387.42

7. Membership Secretary's Report [Cindy Howells]

Adding up the membership totals each year is always a very interesting exercise, as I start with the number who have actually paid, then have to estimate how many of the non-payers I have just forgotten and will pay me double next year. I would urge you all to pay promptly in the New Year, or to set up a Standing Order that will do it for you every year. I do have a periodic purge of members who don't pay me after being reminded several times, so be warned!

Once again, our total membership is fairly stable with 7 new members during 2016 (not including anyone who joined today).

	2016	**2015**	**2014**
Personal UK	**155**	**155**	**154**
Personal Overseas	**22**	**20**	**25**
UK Institutions	**44**	**36**	**49**
Overseas Institutions	**23**	**24**	**24**
Honorary	**6**	**6**	**6**
Total	**250**	**241**	**258**

Please promote the group and encourage all natural science and geology curators to join, in order that they, and their collections, might benefit from our support. Funding for geological posts is still under severe threat, and we need to do everything we can to promote our group, and make it visibly relevant to the issues of our profession. So please let us know if you have a great idea of a seminar or workshop, or would like to offer to host either, especially if you have a new gallery or project that you would like to promote. Mainly, just keep in touch with me (and the rest of the committee), as we do like to feel that we get to know you and what you are up to. Don't forget to sign up for JISCmail if you haven't already, and also our Facebook page.

Let Cindy Howells know if you change your address, job or email address, so that we can continue to contact you and send out publications.

8. Programme Secretary's Report [Simon Harris].
Circulated.
The current format for organising the AGM presents a panoply of different methods for delegates to register and pay, and I would urge the incoming post-holder to investigate if there are any ways that this can be simplified. One obvious example is Eventbrite, which is already used by groups similar to this one, although I am aware that a small fee is levied by the service. One clear advantage however would be the ability to register online and receive confirmation of your payment immediately.

The meteorites course in Cardiff in October was well reviewed by attendees although numbers were not as high as I had hoped. One reason may well be that many people were unable to find the time and/or funds to go to the event, and as we move forward in

redeveloping the website I would be happy to contribute to the development of digital resources which can be consumed by our members regardless of their location.

The "Be a Curator" stand went to Scarborough Fossil festival in September, and was staffed by a number of committee members who were able to draw upon the generosity of their own institutions to spend some time on the GCG stand. We borrowed a selection of fossils from the Natural History Museum's handling collection, but would like to have our own set - if any members are able to supply anything, then we would like to hear from you.

Finally, we had planned a "webinar" for the summer but this never materialised due to a number of factors, principally finding participants who had the time to spare and also technical limitations (GCG does not have its own hardware or software, so we would have had to borrow this from our institutions and ensure it was fit for the task). There may be other options more suitable, e.g. using pre-recorded content rather than relying on alive broadcast scenario.

As always, the committee welcomes the input of the membership in shaping the future events programme.

9. Web Officer's Report [Hannah-Lee Chalk].
No report received.

10. Journal Editor's report [Matthew Parkes].
Apologies received from Matthew Parkes. Report read by Sarah King.
Volume 10, No. 5. Comprising 4 papers, was published in July. It was distributed in paper and digital form. Volume 10, No.6. is in production and will be published before Christmas 2016. It is likely to be a slim volume since some papers in progress have been delayed. Plans for the future are not fully settled but two thematic issues are likely to appear in the next year or two. One is a long awaited "special" on Hugh Miller and the other will include proceedings from this ethics AGM Seminar combined with papers from an ethics session convened by Jeff Liston at the European Vertebrate Palaeontology meeting in the summer of 2016.

All submissions are welcomed, as are expressions of interest in taking over the editorship of the journal to allow the current editor to focus on the Guidelines second edition and related development/training ideas developed by committee.

11. Newsletter Editor's report [Helen Kerbey].
Three editions of *Coprolite* were published this year. There has been a fall in reports and information coming in for publication. Any items of news can be sent to Helen Kerbey and anything will be considered including exhibition notices and reviews, gallery renewals, staff changes and new acquisitions. Cindy Howells commented that a report of this seminar will be written up for Coprolite but if anyone would like to write their own impressions of the meeting, feel free to submit a report.

12. Collection Officer's report [Mike Howe]
Circulated.
2016 has been another year of continued ongoing threats to collections, with local authority budgets under further increasing pressure. The British geological Survey lost two and a half collections posts earlier this year and the National Museum of Wales Cardiff is cutting posts again, with the possible loss of the Natural Sciences Conservator.

Torquay is under threat, despite designation, and the Natural History Curator at the Royal Cornwall Museum, Truro, is being replaced by a general collections position. Other collections under threat include: Stockport, Reading and Derby. The geology collections in Dudley will move to the archives building, much nearer to other visitor attractions, including the zoo and the Black Country Museum.

In Ludlow, the Friends of Ludlow Museum are now making good progress with their "FISH" (Fossils In Shropshire) project, which now has its own website: http://fishproject2020.wixsite.com/news .The project was funded with a government grant of £250k. The project eventually gained access to the funds in April and commenced soon after, led by a team of three consultants and ten volunteers. So far, attention has been focused on scoping the collections and acquiring the digitisation equipment. Systematic digitisation will commence in January. Access to the collection, housed in the Resource Centre at Ludlow, has been agreed with Shropshire Museums Service for the duration of the project, until April 2019 (it had been feared until recently that access would not be possible after March 2017).

The movement to digitise and database collections at an international level continues to grow. The Lyell meeting in London in March focussed on Palaeoinformatics, and the underlying theme was the growing interconnectivity of international databases. The theme was highlighted even more strongly at the APNHC meeting in Berlin in June, where GBIF (Global Biodiversity Information Facility -

http://www.gbif.org/) and the iDigBio portal - https://www.idigbio.org/portal/search - appeared to be the two main aggregators for palaeontological data. IGDN (International Geosample Numbers) provide a similar facility for petrology, borehole and palaeontological collections.

Many view scientific research increasingly as the multidisciplinary combining of large datasets. With rigorous curatorial procedures and standards developed over more than a century, geological collections are well placed to be part of this. We already use most of the principles of good practice that the digital world is only just discovering - "MDA" codes (unique object identifiers) are an excellent example.

With regard to the Tunnicliff "Note of advice" paper on research and geological specimens (NERC June 1983), research councils are tightening up on procedures and see well curated research collections as an important factor in allocating funding

13. NatSCA Representative's Report [Emma Bernard].
I have chosen to step down as the GCG/NatSCA (Natural Sciences Collections Association) rep as my workload has increased and felt that it was better for someone else to take over who could fully commit to the role. Isla Gladstone will be the new link and I am sure will do a great job of helping the two societies work together for the benefit of their membership. I have enjoyed my time working on both committees and I want to thank NatSCA for their help and support over the last few years.

We have been looking at how our societies cross over and where we can work together, such as hosting joint meetings. We hope to run the successful "Hazards in Natural History Collections" workshop again. If our membership can think of workshops/meetings that you would like to see, then please do let us know. Over the last few years both societies have been working closer together and helping each other progress.

I am responsible for the GCG's social media, which continues to grow with members engaging with us from Australia, America and Europe. Please help to spread the word and share stories about collections and exhibitions, links, jobs etc. on these platforms.

Twitter @OriginalGCG
(https://twitter.com/OriginalGCG)
The Facebook Groups
(https://www.facebook.com/groups/376700195784835/) and page
(https://www.facebook..com/GeologicalCuratorsGroup).

14. ICON Representative's Report.
No report available as GCG currently has no representative from ICON. Giles Miller has contacted ICON but has had no reply. Nigel Larkin has been approached to take on the role and agrees, subject to approval by ICON committee.

Acceptance of all reports. Proposed: Emma Bernard.
Seconded: Cindy Howells.
Agreed.

15. Election of officers and Committee for 2016 and election of Auditors.
Election of officers.
Nominations for new Officers and Committee are:
Chairman: Matthew Parkes (National Museum of Ireland).
Treasurer: Rachael Walcott (National Museums Scotland).
Programme Secretary: Zoë Hughes (Natural History Museum).
Web officer: Simon Harris (British Geological Survey).
Ordinary Members: Emma Bernard (Natural History Museum, Alex Peaker (Dinosaur Isle).
Co-opted member: (NatSCA representative; Blog editor): Isla Gladstone (Bristol Museum and Art Gallery).
All other post holders remain.
Retiring members, Giles Miller, John Nudds, Hannah-Lee Chalk and Tim Ewin were thanked for their contributions to running GCG.
Election of auditors.
The current auditors, Caroline Buttler and Christian Baars have agreed to continue in this role. Agreed.

15. Any other business.
No points raised.

16. Date and venue of the next Annual General Meeting.
To be decided at a future committee meeting.

17. Presentation of the Brighton medal.
At the end of their time in office, the outgoing GCG chair chooses an individual to be the recipient of the "Brighton Medal", which acknowledges the importance of good curation in advancing geological science, for example by:

· Devoting a significant part of their working lives to the actual care of geological specimens.

· Introducing innovations which have led to significant improvements in the care of geological specimens.
· Inspiring others to the better care of geological specimens, by example, teaching, or writing.
· Fostering an increased awareness of the value of geological collections, e.g. through collections research.

The medal is named for A.G. 'Bertie' Brighton (1900-1988) Curator of the Sedgwick Museum from 1931 until 1968. His career was characterised by prodigious cataloguing, recording on average 10,000 specimens each year. It is estimated that in his lifetime he was responsible for documenting 375,000 fossils. He was the epitome of the dedicated, professional, geological curator.

The outgoing Chairman takes advice from a small, invited, working group of experienced curators independent of the GCG committee, but ultimately the choice of recipient is the decision of the Chairman.

This year the Brighton Medal is awarded to Graham Worton of Dudley Museum and Art Gallery.
Giles Miller cited the following as the most compelling reasons for his choice; Graham has a 35-year association with Dudley as volunteer, professional geologist and keeper, spending 17 years as Keeper of Geology, he is currently the Museum Manager at Dudley. In that time he has led on a number of projects that have opened geology to the wider local community, and all of those projects have community involvement as an underpinning factor with an emphasis on inspiring young people. Graham is one of the leaders of the Black Country Geopark project, has published several webinars on geological topics, and advocated the value of geology collections to MPs at meetings in the Houses of Parliament. On top of this, Graham has overseen the move of the Dudley geology collections to their new home in the Dudley Archives building.

Unfortunately, Graham is not able to be present to receive the medal in person so he will be presented with the medal at a later date and full details published in The Geological Curator.

Giles Miller thanked all today's speakers and the organisers for a very interesting seminar and AGM.

BOOK REVIEWS

***The Limestone Quarries of Buxton*. Alan Roberts and Frank Emerson. Published by Buxton Civic Association, Buxton, May 2018. UK£5-50, paperback, 106 pp. No ISBN.**

Finding a new book on an aspect of the geology, in the broadest sense, of a favourite field area is always a pleasure. When I enrolled as an undergraduate at the University of Manchester in 1977, one of the reasons for choosing where to study was the close proximity of the Peak District. This was accessible by three different railway routes from Manchester even after Beeching and Castle had done their worst. The southernmost route is to Buxton, a favourite, leading as it did to the geological joys and scenic beauty of the White Peak (= Carboniferous limestones). Over 40 years later, Buxton maintains its attractions, even if today I catch my train at Manchester Airport (change at Stockport).

The thrust of this slim volume is the history of the local quarrying industry, dating from the 17th Century and before. Geology is not a major issue in this story - limestone is limestone - but the story is fascinating nonetheless. The structure of the book is logical, progressing from early beginnings to the present day. The industry was essentially local until the railway age reached Buxton, providing routes north, east and south for lime and limestone. In 1891, a number of quarry companies organised themselves into the Buxton Lime Firms (BLF). A feature of the BLF was its robust buildings designed by George Garlick, exposed as they were to repeated hazards of large scale quarrying such as ground shocks, air blast and falling rocks. But their form was unusual, reminiscent of "… the architectural style of the Upper Nile of the 15th century BC" (Eisner quoted on p. 33). During the First World War, both women and German prisoners of war were employed in quarry work. Brunner Mond took over BLF in 1918; in 1926, Brunner Mond were one of the companies that combined to form Imperial Chemical Industries (ICI). The quarries were extensively modernised between the Wars. Tunstead quarry was turned over to munitions work in World War Two. After the conflict, many smaller quarries were closed and others changed hands; for example, ICI's lime business in the Buxton area is owned currently by CRH.

Peculiarly, *Limestone Quarries* lacks an ISBN. Figures are monumentalised by having captions in bold and many are also capitalized, yet captions are invariably too brief. While it is usually possible to work out the significance of a figure by reference to the text, the captions themselves should be informative and stand-alone. For example, the important point about figures 4.7 and 4.8 is that the quarry jobs are being performed in wartime by women, but captions are 'Painting a BLF Wagon' and 'Breaking Stone', with no focus on the important issue. The reference list lacks essential details - two of these are obviously magazine articles, but are all the others books? Who published them and where? At least one publication is quoted from (Eisner on p. 33) that is not in the reference list. And, overall, the text would have benefitted from the attentions of a critical and informed copy editor.

This book will be of interest to all with an interest in the Mountain Limestone of Derbyshire and its quarrying industry. *Limestone Quarries* is inexpensive, well-illustrated and informative, and is a worthy addition to my short shelf of books on the geology of the White Peak. If you are visiting the Peak District, I bought my copy in Poole's Cavern, where you can also examine another aspect of the limestones of Buxton with the promise of a cup of tea at the end.

The publisher can be contacted at <communications@buxtoncivicassociation.org>.

Stephen K. Donovan, Naturalis Biodiversity Center, Leiden, the Netherlands

***Historical Geology in Maps. Maps of the Past Geology, Geography, Coastlines, and Climate of the British Isles and Ireland*. Peter Roberts. Published by Russet Publishing, Cheshire. 2016. £9.49, paperback, 137pp. ISBN 978-1-910537-07-7.**

***Tectonic Plates. How the World changed. An elementary introduction to World-wide Tectonic Plate Migrations over 750 Million Years*. Peter Roberts. Published by Russet Publishing, Cheshire. 2016. £6.49, paperback, 49pp. ISBN 978-1-910537-21-3.**

It may seem odd to review two books in one go, but these are two companions that are best treated together, sharing many characteristics and indeed some of the maps are common to both. The Tectonic Plates book is a basic primer, whilst the Historical Geology in Maps book is an expanded look at the plate migrations through the last 750 million years, centred on Britain and Ireland. Part I of this shares the plate migration maps with Tectonic Plates, but the bulk of the book is Part II where each stratigraphic Period or orogenic episode is presented with some global plate distribution maps, and some palaeogeographic reconstructions of the Britain and Ireland region. The text explore, the geology, geography, climate, fossils and so on.

The books both carry an intensely personal style - they are exactly what the author wanted to deliver. They have a slightly dated appearance and are in black and white throughout with no colour except on the cover. However, cheap and cheerful also means good value for your money and I would recommend these books. Primarily my recommendation is upon the distillation of complex information into a comprehensible read, presented with simple but effective maps. For the beginner, the lay-person, the ama-

teur geological enthusiast, school or undergraduate students, civil engineers and others the books could help greatly in taking in what can be very hard to understand when approaching through professional papers and books. Even with the wealth of online resources and material available from different sources these 'plain language' books have a valuable place.

Some professional geologists could benefit from the lesson they provide in presenting complex ideas in a simple way. One critical point for the author is the use of the same map projection throughout in order not to confuse people. The role of plate tectonics, geology and oceans in changes of climate through time is something that might help teachers and readers get a better perspective on today's climate change issues and to be more informed.

For their potential appeal to a wide audience, I could recommend these two books for museum shops as well as the geological community. www.RussetPublishing.com provides information on purchasing these books.

Matthew Parkes, Natural History Museum, Dublin

THE GEOLOGICAL CURATOR

Publication scheme

Two issues of *The Geological Curator* are published for each year (usually in the Spring and the Autumn); a complete volume consists of ten issues (covering five years) and an index.

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2. **Use italics** rather than underline for latin names and expressions, journal names and book titles. **Use bold** for volume numbers in references.
3. **Single space** your file. Use a **single (hard) carriage return** at the end of each paragraph.
4. Single space-bar between words, **double space-bar between sentences**.
5. **Do not attempt** to format your article into columns. Use a minimum of tabs and indents.
6. Author names in the references should be in capitals.

If no computer facilities are available to authors, please discuss submission of proposed articles with the Editor, Matthew A. Parkes, Natural History Museum, Merrion St., Dublin 2, Ireland (tel 353-87-122-1967; e-mail: journal@geocurator.org).

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LOST AND FOUND enables requests for information concerning collections and collectors to reach a wide audience. It also contains any responses to such requests from the readership, and thereby provides an invaluable medium for information exchanges. All items relating to this column should be sent to the Editor (address above).

FACT FILE contains basic information for the use of curators. All items relating to this column should be sent to the Editor.

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