

# GCCG

NEWSLETTER  
OF THE  
GEOLOGICAL  
CURATORS  
GROUP

NUMBER 2

DECEMBER 1974

*Extract from a paper written by  
John Woodward, M.D., about 1700 A.D.\**

## BRIEF DESCRIPTIONS

for making

## Observations and Collections

AND

For composing a travelling Register of all Sorts of FOSSILS.

### *1. Of keeping a Register of the Fossils as they are Collected.*

By Means of Paste, Starch, or some fit Gum ought to be fix'd on each Sample collected, a bit of Paper, with a *Number upon* it, beginning with No. 1. and proceeding to 2, 3, and so on . . . Then in the Register, enter *Numbers*, answering those fix'd on the Fossils, and under each Note, 1°. *what Sort* of Fossil or Mineral 'tis reputed to be. 2. Where 'twas found. 3. Whether there were more of the same, and in what *Number* or *Quantity*. 4. Whether it was found on the *Surface* of the Earth: 5. Or, if it lay deeper, note at what *Depth*. 6. In what *Posture* or *Manner* it lay. 7. *Amongst what* Sort of terrestrial Matter 'twas lodged: 8. Whether in a Stratum, or perpendicular Fissure . . .

THIS is the fittest Conduct and Procedure I can pitch upon . . . To which Purpose that Register ought always to be *ready* at Hand . . . and the Observations entred upon the *Place*, for fear of Mistakes or Failure of Memory.

\* J. Woodward, *Fossils of all kinds digested into a method* . . . London, 1728.

## DR. JOHN WOODWARD, F.R.S. F.R.C.P. (1665-1728)

Dr John Woodward, F.R.S., F.R.C.P. (1665-1728) is the author of the penetrating observations, on the collection and registration of all sorts of geological objects then called "fossils", featured on our cover. These were not published until the year of his death 1728, but Dr V.A. Eyles has shown that these directions were issued probably only in manuscript to various collectors Woodward employed to augment his collections. They probably date from between 1700-1705. For words written 270 years ago they have an incredibly modern ring - advocating both good basic recording in the field i.e. abundance of specimens, whether in situ or not, if in situ at what depth and finally whether in a normal or abnormal stratigraphic situation, but also good curatorial techniques recording all this information in a register and numbering the individual specimens to correspond.

Woodward's earlier 1696 "Brief Instructions for making observations in all parts of the world" has been recently (1973) reprinted with a fine introduction by Dr V.A. Eyles by the Society for the Bibliography of Natural History. Dr Eyles has also published "John Woodward 1665-1728 a bio-bibliographical account of his life and work" in J. Soc. Bibliography Nat. Hist., Vol. 5, part 6, pp.399-427, 1971, to which all seeking further information must refer. Woodward qualifies as the first really scientific collector of geology and is a model for the topic of our AGM.

H.S. Torrens

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### EDITORIAL

Neglect, which is highlighted in this issue occurs largely as a result of ignorance and apathy. Anything that can be done to overcome these two evils can only be beneficial. Because of the nature of our profession there must be a large section amongst us with only a rudimentary knowledge of geological curatorial procedures. They look through the Group for help. Collections, unfortunately, do not select their curators and those latter less specialized must not be deterred from seeking advice and assistance WITH CONFIDENCE. Specialist groups are frequently viewed with some suspicion by larger organisations. We aim for wholehearted collaboration by all. The Newsletter tries to express these aims and offers information and a means of communication between all concerned - and CONCERN is something that should be felt on a national level at the state of our collections.

B. W. Page.

### PROGRAMME:

One-day meetings have been arranged for 13th December at the Geological Society and 21st March at Sheffield Museum.

GEOLOGICAL MUSEUM MEETING

The Group's first meeting was held, appropriately enough, at the Geological Museum, London, on 18th October. 77 people assembled in the lecture hall for the introductory talk - an impressively high turnout from a membership of 83, but clearly the audience must have included staff from both the British Museum and the Geological Museum who were not members of the Group - an encouraging sign of interest among potential future recruits.

The programme centred around 'The story of the Earth' exhibition. In his introductory talk, Fred Dunning described the layout and gave a lucid and forthright account of the problems which had been met in producing the displays. He also outlined the changes which had been made since the gallery opened and those being carried out in the near future.

An examination of the gallery itself followed, with members of staff in attendance to answer questions. Those already familiar with the displays took the opportunity to go behind the scenes to discover, among other things, just how the erupting volcano effects were contrived.

On the mezzanine floor, a spirited group of soft-toy dinosaurs introduce the newly opened 'Story of Life' displays. The main feature here is an illuminated Tree of Life, which traces the colour-coded phyla through the geological column. Also included is a Pepper's Ghost display contrasting the landscape of the Thames estuary today with that of the Hoxnian interglacial. A popular exhibit, to judge from one boy's excited yell: "Hey Jimmy, there's a man changing into a gorilla!" Purists might object that the boy had missed the point (especially since the 'gorilla' was not Swanscombe Man but his modern descendant, sombrely clad in Home Counties overcoat and tweeds) but it clearly provided him with the afternoon's most memorable moment.

Finally an outline was given of the Museum's plans for the future. New permanent displays will include 'Britain before Man' on the ground floor; 'Fossils of Britain' replacing the first floor regional displays and, eventually, a new Economic Geology gallery on the top floor. This exhibition programme is expected to take 20 - 25 years to complete and, after so successful a start, should provide ample opportunities for further visits by the Group.

We would like to thank the staff at the Museum for their help and hospitality.

PALAEONTOLOGICAL TYPE SPECIMENS

The importance of type specimens in palaeontology (and zoology) can never be over-emphasised. They are (and remain) the basic raw material by which species in the animal kingdom are defined. They must remain so in palaeontology for the long foreseeable future despite the advances made with numerical taxonomy for living animals. David Owen (1964, p.288) has rightly described them as the greatest treasures of natural history museums.

Their safe and recorded existence is thus a matter of vital importance to taxonomists who study the animals, and museum curators who guard the material for their definition. As the International Code for Zoological Nomenclature (I.C.Z.N.) 1964 states in its Article 72 f. "Value of types - Holotypes, syntypes, lectotypes and neotypes (and one must add paratypes) are to be regarded as the property of science by all zoologists and by all persons responsible for their safe keeping".

The five categories of type specimens mentioned above constitute the only primary (i.e. defining) types recognised in taxonomy, and these are the categories which most need to be recognised and identified in Museum Collections and Publications. The important difference between Primary and Secondary type specimens is not sufficiently emphasised by Swinton in his discussion (1948).

Definitions of the five primary type categories are as follows:

(a) Types defined by the original author of the species at the time of its definition.

(i) Holotypes

(a) Single specimen - If a new nominal species is based on a single specimen, that specimen is the "holotype", and should be labelled as such.

(b) Specified type - If an author states in the description of a new nominal species that one specimen and only one is "the type" or uses some equivalent expression, that specimen is the holotype, and should be labelled as such.

(ii) Syntypes

If a new nominal species has no holotype under the provisions of (a) and (b), all the specimens of the type-series are "syntypes" of equal value in nomenclature, and should be labelled as such.

(iii) Paratypes

After the holotype has been specified all remaining specimens (if any) of the original type series are "paratypes" and should be labelled as such.

(b) Types defined by an author subsequent to the species original definition.

(iv) Lectotypes

If a nominal species has no holotype or if the holotype is lost, any zoologist (or palaeontologist) may designate subsequently one of the syntypes as the "lectotype". Remaining syntypes then become "paralectotypes".

(v) Neotypes

Subject to important conditions a zoologist (or palaeontologist) may designate another specimen to serve as "neotype" of a species if no members of the original type series (i.e. holotype, syntype, paratype and lectotype) are still in existence through proven loss or destruction. The loss of holotype or lectotype only is not sufficient cause for the designation of a neotype contra Swinton 1948 p.72 and Owen, 1964, p.289. Article 75 c.(3) of the I.C.Z.N. states all original type material must be proven lost or destroyed, before this action can be taken.

These definitions must be strictly observed by reference to the original published descriptions. Thus if a species was based originally on only one specimen there can by definition be no paratypes or syntypes for that species.

The I.C.Z.N. code makes the following Recommendations relating to Museum practice concerning type specimens which must always be adhered to:

Recommendation 72A. Institutional custody - A zoologist who designates a holotype or lectotype should deposit it in a museum or other institution where it will be safely preserved and will be accessible for purposes of research. Deposit of neotypes in a museum or other institution is mandatory [Art. 75c (6)].

Recommendation 72B. Labelling - A zoologist designating a holotype, lectotype, or neotype should unmistakably label the specimen in a way that will clearly indicate its status.

Recommendation 72C. Information on labels - When designating a holotype, lectotype, or neotype, a zoologist should publish all information that appears on the labels accompanying the specimen, so as to ensure the future recognition of the specimen.

Recommendation 72D. Institutional responsibility - Every institution in which types are deposited should

- (1) ensure that all are clearly marked so that they will be unmistakably recognized;

- (2) take all necessary steps for their safe preservation;
- (3) make them accessible for study;
- (4) publish lists of type-material in its possession or custody; and
- (5) so far as possible, communicate information concerning types when requested by zoologists.

The five categories defined above constitute the only primary sorts of species types recognised by the I.C.Z.N. Many other secondary type terms have been introduced - for fullest discussion see D. L. Frizzell, 1933. Some are useful such as:

- (a) Topotype - any specimen of a species coming from the same locality and geological zone as the holotype or syntypes of that species.
- (b) Metatype - a specimen identified by the original author as conspecific with his species, and from the same locality.

Swinton 1948, Owen 1964 and Morley-Davies 1961, p.273, all use plesiotype as an additional useful secondary category, but this term has been the subject of 3 different definitions (see Frizzell, 1933), and is best ignored. Morley-Davies' discussion of the Rules of Nomenclature is in other ways an adequate summary (1961, pp. 262-277).

Some secondary type categories seem even less useful at least in geology. My favourite is the entomologists Isotype - a specimen collected by the same person on the same day, in the same locality and as nearly as possible equivalent to the holotype; a category reflecting the differences in collecting techniques between geology and entomology. One is tempted cynically to ask if an isotype collected 10 minutes after the holotype but on a different day would be valid?

For general taxonomic problems nothing can replace the official I.C.Z.N. code for zoological objects. Botanists are bound by the International Code for Botanical Nomenclature and there is a separate one for Bacteria.

The best introductory text, although by a botanist, on problems of taxonomy and type concepts is

C. JEFFREY, 1973 - Biological Nomenclature. Edward Arnold, London. 69 p. available in paperback and containing a useful glossary of terms.

R. E. BLACKWELDER, 1967 - Taxonomy. A text and reference book. John Wiley & Sons, 698 p. is an exhaustive text book.

A system of physically marking type and figured specimens and those merely cited in the scientific literature is obviously essential. If, therefore, a specimen gets divorced somehow from its original label its importance can still be instantly recognised and rescue organised.



The British Museum (Nat. Hist.) system is worth wider application. Here all type and figured specimens have a small green circular tab attached to them (a paint blob is equally suitable if removable and placed with care so as not to obscure any vital feature of the specimen). Types then have HT (holotype) or PT (paratype) etc. written on the blob itself to further identify them. The type specimens are further housed in lurid pink trays for instant recognition. The accompanying labels will also state the type category and the author and place of publication.

Merely cited specimens in the same system have a similar but red tab or blob affixed. But this sadly is by no means yet general practice.

Dr. M. G. Bassett of the National Museum of Wales as noted in the first newsletter (p.13) is collecting published lists of type, figured and cited palaeontological material in Museums in the British Isles. As our first contribution to this we are very glad to have the following listing for the Sheffield City Museums from Tim Riley following I.C.Z.N. Recommendation 72D(4).

H. S. Torrens

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Terminology of types.

American Midland Naturalist 14, 637-668.

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An Introduction to Palaeontology.

3rd edition. Thomas Murby & Co.

OWEN, D. 1964

Care of type specimens.

Museums J. 63, 288-291.

SWINTON, W.E. 1948

Notes for Students. III Type-specimens.

Museums J. 48, 72-73.

TYPE SPECIMENS IN THE PALAEOONTOLOGICAL COLLECTIONS OF SHEFFIELD CITY  
MUSEUMS, ENGLAND

A few fossils in the collections of Sheffield City Museums have at various times been considered as primary type specimens. This paper places on record those so noted, together with relevant data and citations. It is of course possible that further type material is present in the Museum's collections, but is unknown to the author.

ANIMALIA  
SCAPHOPODA

"Dentalium" sorbi King 1850 HOLOTYPE  
Magnesian Limestone, Permian.  
Conisborough, Yorkshire.  
Presented by H. C. Sorby, 1880.  
Accession number: H.27.11.80.777

The specimen was described but not figured by King (1850, p.218) and has been cited by Howarth (1910, p.192).

TRILOBITA

Griffithides longiceps Portlock var. angustata SYNTYPE  
H. Woodward 1901  
Carboniferous Limestone.  
Stoney Middleton, Derbyshire.  
Purchased from Rev. Urban Smith, 1888.  
Accession number: H.88.1103.

Griffithides longiceps Portlock var. angustata SYNTYPE  
H. Woodward 1901  
Carboniferous Limestone.  
Wetton Mill, Staffordshire.  
Purchased 1893, ex. Thomas Bateman Collection.  
Accession number: H.93.118.

Var. angustata was erected jointly on H.88.1103 and H.93.118 by Woodward (1901, p.152-4, plate VIII, figs. 6 = H.88.1103, 7 and 8 = H.93.118.)

PLANTAE  
SIGILLARIACEAE

Sigillaria sol Kidston 1897 NO STATUS  
Barnsley Thick Coal, Middle Coal Measures (Westphalian B)  
Kilnhurst, near Rotherham, Yorkshire.  
Presented by C. Bradshaw, 1900.  
Accession number: H.1900.50.

E. Howarth (1910, p.192) stated that the [holo] type of Sigillaria sol Kidston is in the collections of Sheffield City Museum. He presumably refers to this specimen (H.1900.50). However Crookall (1966, p.391) states that the holotype and only known specimen is in the Kidston Collection (No. 1407), Geological Survey and Museum. Crookall (1966) also figures specimen No. 1407 and it does indeed agree with Kidston's original figure. Kidston (p.57) received his holotype in 1888 from Mr. C. Bradshaw, from the same locality as the Sheffield Museum specimen.

(C. Bradshaw at this time was Assistant Curator at the Sheffield City Museum.) The Sheffield Museum specimen has no status as a primary type, although it is certainly a Metatype (an unofficial term for "a topotype subsequently identified by the author of a species subsequent to its erection"). Howarth and Crookall's statements above both need correction: Howarth as to the status of the Sheffield specimen, Crookall as to number of specimens known.

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Fossil plants of the Carboniferous rocks of Great Britain, second section, part 4. Memoirs of the Geological Survey of Great Britain, Palaeontology, vol. IV, part 4.

##### HOWARTH, E. 1910

Museums and Art Gallery in 'British Association Handbook'  
Sheffield 1910.

##### KIDSTON, R. 1897

On the fossil flora of the Yorkshire Coalfield, Second Paper.  
Trans. Royal Society Edinburgh, vol. XXXIX, pt. 1, No. 5.

##### KING, W. 1850

A monograph of the Permian fossils of England. Palaeontogr.  
Soc. Monogr. vol. III, pt. 1.

##### WOODWARD, H. 1901

Note on some Carboniferous trilobites.  
Geol. Mag. decade IV, vol. VIII.

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GEOLOGICAL COLLECTIONS AND COLLECTORS OF NOTE

1. LICHFIELD MUSEUMS (pre 1850) postscript

As a result of the article in the first GCG Newsletter some more information about the Lichfield collections - described by Thomas Kelly (1970, p.110) as the first public provincial museum in England - can be added.

Dr. C. L. Forbes of the Sedgwick Museum, Cambridge, has kindly looked into the problem of the Sedgwick ichthyosaur Reg. No. J.47003 noted in the article, as recorded from the Lias of Lichfield where there is none exposed. He confirms that it is the specimen recorded by Seeley 1869 as the "Anterior part of the snout of a long-nosed Ichthyosaur ... from near Lichfield". In the same work (preface, p.iv) Adam Sedgwick wrote "In 1821 our (the Sedgwick Museum's) first plesiosaur was obtained by purchase at an auction of fossils which had been collected by a naturalist of Lichfield. [This] genus was at that time so little understood that the specimen now mounted in our Museum was put up in the same lot with a very fine portion of the head of a small Ichthyosaur; and the two had been catalogued as portions of one animal".

The Sedgwick specimen (J.47003) must thus have formed part of lot 150 at the sale which was, according to the sale catalogue, "A most uncommon and fine specimen of the Proteo-saurus EXTREMELY RARE with a set of drawings of both sides, in chalk, as large as the specimen. This specimen was found in a stone quarry at Wilmcote, near Stratford-upon-Avon, 30 feet below the surface. It is a fossil of extreme curiosity and interest and "partakes of the formation of various animals" (sic - see above!). A specimen has been sold for 100 guineas."

This account bears out the details of this "specimen" given by White Watson in 1811, and the locality of the Sedgwick Museum ichthyosaur snout can now be corrected after 153 years! But the associated plesiosaur cannot now be identified.

It may be possible to identify this as a contemporary description and engraving of it has been discovered thanks to some more detective work and help from the Bristol University Medical Library staff. The sale catalogue also states, referring to lot 150, "For a particular account see Medical and Physical Journal for Feb. 1801". In fact the correct reference is for February 1811, vol. 25, no. 144 pp.97-101 with a plate, "Remarks on Fossil Remains" by Joshua Brooks. This is the same reference as that quoted by George Cumberland (William Blake's friend) in 1829 (p.347) as Eooks Journal,

vol. 25, page 101, which was previously untraceable. Cumberland wrongly quotes the depth of the fossils discovery as 80 ft.

Brooks (or Brookes as he appears in the Dictionary of National Biography) lived from 1761 to 1833 and was a famous anatomy teacher in London who was elected F.R.S. in 1819. He, like Dr. Richard Wright of Lichfield, built up a famous museum mainly of anatomical interest at a cost of £30,000 which was dispersed once again by auction in March 1830.

Brooks, writing from the "Theatre of Anatomy, Blenheim Street, London", sent in an engraving of the Wilmcote "specimen" to the Journal because of its interest to naturalists as an apparently extinct species of crocodile or alligator, but differing from existing species in the form and disposition of its teeth.

The engraving shows that the "fossil" was indeed composite, as Adam Sedgwick claimed, for it depicts an ichthyosaur skull together with the majority of a headless plesiosaur skeleton. The skull is now in the Sedgwick Museum specimen J.47003, and it is hoped that the plesiosaur may also now be recognisable amongst the Sedgwick Collections from the engraving.

Brooks says the engraving was done by a young gentleman who had studied anatomy under him, Alfred Jukes of Birmingham. It is possible he is a relative of Frederick Jukes of the General Hospital Birmingham who published on Silurian trilobites and cephalopods from the Birmingham area in the Magazine of Natural History series, vol. 2 in 1829, which would suggest, if so, a family interest in fossils.

The Sedgwick Museum also acquired the other notable fossil mentioned in the sale catalogue namely lot 138 "Jaw with teeth of the Great Mastodon, a rare and most magnificent specimen". This was presented to the Sedgwick Museum in 1822 by the Rev. Mr. Newling who bought it at the sale.

Joshua Platt, a benefactor to the Lichfield Museum, who was mentioned in the article, died on December 26th, 1776 as the Gentlemen's Magazine records (Vol. 46, p.580). "In his 80th year universally regretted Mr. Joshua Platt of Oxford, well known to Naturalists for his Treatise on the Belemnite published in the Philosophical Transactions /Royal Society, Vol. 55, 1767/. His manners gained him the respect and esteem of all who knew him". This would make him born in 1696. Platt himself recorded his age as 73 in 1772, so he must have lived in fact from 1699-1776.

References see page 59.

GEOLOGICAL COLLECTIONS AND COLLECTORS OF NOTE

2. NORTHAMPTON CENTRAL MUSEUM

In the Museums Assistants Group News for November 1973, a letter from Phil Doughty appeared concerning the collections at Northampton Central Museum and their lamentable state of decay. His acid comments, so unfortunately accurate, came at a late stage in this saga, the pages of which were first opened to me by Dr. H. S. Torrens of Keele University whose repeatedly frustrated attempts at locating type and figured material in the collections led to my being asked to undertake a rescue operation to restore some semblance of order. The details of that operation and its discoveries are felt to be instructive and should serve as an illustration to the staff of more fortunate museum departments of geology as to the dangers of inadequate curatorial care. They should also serve as a warning to those members of the profession who are guilty of similar crimes. The work was carried out during the summer of 1972.

The floor space allocated as a geology store is approximately 450 sq. ft. and this contains 9 stacks of Dexion shelving, 2 large drawer units, 2 small drawer units, and 2 large showcase/drawer units. Whilst this was a deceptively tidy arrangement, the additions to this were most certainly not:-

- 2 tea chests bursting with specimens including splendid Solenhofen fossil material at the bottom of one. (see p. 47)
- 1 large hamper of assorted specimens. (see back cover)
- 1 elephant skull
- 4 elephant tusks
- 1 elephant foot
- 1 crocodile skull with handle for easy articulation of the jaw
- Several boxes and cartons, all full.
- A collection of modern corals.
- An empty coin cabinet.

Apart from these notables, more specimens together with other flotsam and jetsam were scattered liberally throughout the store. An examination of the contents of all of the cabinets and boxes revealed a collection of some superb material, filthy with dust and in total disarray. Most of the material affected belonged to the collection of Lord Northampton who was

president of the Royal Society for 10 years, 1838-1848, and the Geological Society in 1820-1822. More fortunate was the second major collection at Northampton, that of Beeby Thompson whose partly curated material has remained virtually as he left it, though suffering from dust and occasional serious pyrite rot. Pyrite decay was in places more advanced (see back cover).

Judging from the newspapers acting as dust covers (which they didn't) there have been two periods of curatorial activity, for better or worse. One was in 1922, presumably by Thompson since that was the year his collection was purchased by the Northampton Museum Committee, and the other in 1946 by person or persons unknown. In the intervening periods chaos had reigned and remained supreme up to the present day. The problems of producing order from this mess were not so much mental as physical. All of the cabinet drawers were full and since most of them contained assorted material initial sorting consisted of constant shuffling and re-shuffling of drawers and specimens. This was made more difficult by the state of the cabinets. Many drawers were ill-fitting or broken and were rarely interchangeable. There was very little working space and so sorting progressed on the floor and in a neighbouring store though under somewhat obstructive conditions. Dr. Torrens had had the foresight to ask the museum to obtain two large cartons of cardboard trays which were used extensively throughout the exercise.

During a period of many weeks, several tasks ran concurrently. The major question which raised itself when confronted with the collections as they stood, was on what criteria should the material be first sorted and then stored? It was obviously impossible at first to try and locate a single category when it was scattered throughout the collection and so more obvious criteria had to be used at first and refinements introduced later. As well as the basic sorting, specimens were first cleaned and checked for any items of importance, e.g. material of named collectors; type or figured specimens of which Hugh Torrens had prepared an initial list of type and figured material known or expected in the collections from previously published statements. Any of the latter that were found were put aside and checked against the literature to gather all relevant information. An eye was kept on the various handwriting on labels since comparisons often betrayed the origins of a specimen.

Leaving aside the Thompson Collection, which was already curated to some extent, the most obvious initial project was to gather together all of Lord Northampton's material, recognisable by printed labels bearing the words ... 'Collection Lord Northampton' together with any relevant data.

Sometimes specimens were only known to belong to this collection by a clear rectangular area where a label had formerly been attached. Within this grouping it was soon necessary to form subdivisions. These were usually under zoological and stratigraphic headings, e.g. Chalk Echinoids; Chalk Asteroids. Other criteria were used when it was felt to be important: all of the Solenhofen (Germany) U. Jurassic material was sorted together and then subdivided into fish and crustacea. The collection of cephalopods from Christian Malford, Wiltshire formed such a distinct group that they were stored under the locality name. The Devonian polished corals formed another easily recognisable group. Many specimens could not be shown to be a part of the Lord Northampton Collection, but often it was apparent that this was their origin, usually by the methods of development of the specimens concerned. In these cases the material was sorted as 'Lord Northampton - uncurated'.

Specimens which did not belong to this collection were likewise sorted under a variety of headings, depending usually on the apparent quantity of material involved. Lias fossils were abundant and could be sorted zoologically. It was also useful in this case to differentiate between local Lias and non-local Lias. In the latter group a set of French Lias was discovered and isolated. Again, when a locality was found to be important, the material was sorted accordingly, e.g. Hunstanton Red Chalk. Handwritten labels often provided clues to the origin of a specimen. A lot of material was united by having labels written in crude black italics and this was noted.

It was apparent at an early stage that the abundant Tertiary fossils were of no great importance except a collection of Sicilian Pliocene material made by Lord Northampton (who had a house at Palermo) at the instance of Charles Lyell who visited him there, and to enable more urgent work to be continued they were therefore sorted merely as 'Tertiary Molluscs'. Future work can improve on this. Whenever specimens belonging to a particular collection were discovered they were stored under the collector's name, e.g. Porter Collection; Jesson Collection. This was felt to be very important since it is in such named collections that valuable specimens are often to be found.

Some detective methods of sorting were occasionally necessary. A collection of Polyzoa from Ranville Normandy France was found in which all the specimens had originally been stuck to cards but had since become detached. Matching of specimens was easily accomplished by comparing the remains of glue and paper on the specimens with the damaged areas on the cards.



Any material left over which could not be easily classified or which was unidentified and poor in quality was sorted as being 'loose'. Some zoological sorting was possible when numbers permitted. Sorting for size was also convenient on occasion. Any other obvious grouping was employed where possible. Some of this loose material has been made available to the Schools Loan Service of the museum though very little was utilised for this purpose. Some important material may yet remain unrecognised in this category, any people seeking as yet undiscovered material are urged to bear this in mind.

It should be stressed that all of the tasks outlined were carried out simultaneously and none was truly finished until the end of the project. Because of the expansion of the collection due to the sorting with no corresponding expansion in the space available many compromises had to be made. Some drawers are more full than they should be but in the light of the previous history of the collections it was felt that accessibility was more important than over-cautious treatment. After all the drawers had been cleaned and waxed, they were numbered and labelled with Dymotape. The Dexion shelving was numbered for easy reference. A card index was drawn up so that any large or important category could be soon found. This should provide an initial check for anyone wishing to work on the collections, though searches for more specialised material may still prove difficult. A detailed card index was also made of each type and figured specimen which were individually numbered and locked away in the drawers underneath the geology displays in the top gallery (Northamptonshire Room) of the museum. Both these indices are located in the store.

Much of the concern over the collections at Northampton was about the fossil collections and the types hidden in them. In addition to these however there was a large mineral collection, largely formed again by Lord Northampton. Due to a lack of expertise in identification this material was left alone until Dr. R. J. King became interested and started work on it at the University of Leicester. He has reported to me that all of the specimens he has seen were filthy and often battered though of a high mineralogical standard. His treatment consisted of cleaning, identifying, numbering and cataloging. Conservation measures were also taken where necessary. He has in some cases been able to match specimens with labels found in envelopes with the collection. His task is now completed, having dealt with specimens approaching 2,500 in number. Of these he has indicated that 150 are of some importance. It is unfortunate that since the vast majority of specimens have no accompanying data, the remaining collection is virtually worthless, except as a teaching collection.

I would like to record here my personal appreciation of Dr. King's work, undertaken completely voluntarily. He has received no official thanks and in fact received a complaint at the beginning of the job which was, however, retracted. All specimens have been returned to the museum and the catalogue deposited with Mr. R. Moore, the museum Archaeologist.

After 2 months intensive work, the geology store was left in a fairly accessible condition. Measures were taken to protect much of the collection from dust. Over 45 type and figured specimens were unearthed, most anticipated but with some true finds. It is hoped a full list will be published in the future jointly with Hugh Torrens. During the project many identifications were carried out by him and by Dr. T. A. Getty, now of Portsmouth Museum. Since then, Mr. J. B. Delair of Caledonian Land Surveys Ltd. has studied the vertebrate material and has identified and listed over 400 specimens. His catalogue is also lodged with Mr. Moore.

I have recently made a return visit to Northampton to check on the condition of the collections 2 years after the project was completed. The signs are not good. Though the collections themselves have remained undisturbed, dust has penetrated into many of the drawers. Two tea chests of tropical seashells have appeared taking up much of the floor space. The rest is occupied with a heavy piece of shoe manufacturing machinery and a table covered with boxes of boots and shoes. Newly acquired geological material, brought in as enquiries and gifts, has been left lying around at random. The elephants have also returned.

The state of affairs at Northampton can be ascribed to various agencies. Naturally enough, much of the blame has fallen on present personnel but this blame cannot be placed squarely. The criticism by Phil Doughty may be accurate but it is not far reaching enough. The administrative set-up at the museum has never been good, and progress has been hindered by an apparent lack of interest at higher levels. An example of this is that even though pressed by the Museum for many years the appointment of a Field Archaeologist was never approved, and yet Northampton Development Corporation saw fit (quite rightly) to appoint an Archaeologist with full back-up facilities and no shortage of man power. What price a Geologist? The position now, under a Leisure and Recreation Department is even worse since the Curator has lost direct access to his committee. Surely no profession can allow this kind of treatment to be handed out arbitrarily to its members. What also of previous Curators -- they must also share some of the blame. Should one blame any of the present staff, who working under difficult conditions are presumably only trying to improve their department's efficiency, albeit with dubious tactics? Short of total re-

organisation it would seem that the only hope for the collections at Northampton (and this not only includes geology) is if they are removed on loan to national museums where their safety is assured, until such time as Northampton is able and prepared to fulfill its responsibilities. As David Owen has said in the Museums Journal vol. 63, p.389-90, 1964 "The prerequisite of the provincial museum holding type specimens is a suitably qualified member of the staff always in charge of the types with fossils a geologist. The small museum without had much better place its type specimens in an institution whose staff are appointed primarily to care for the specimens." But the real solution to the problems at Northampton does not lie in the hands of geologists, though fortunately we are now in a position to help each other. The solution lies with the 'profession' and until it wakes up, Northampton and museums like it will sleep on.

#### Acknowledgements

My sincere thanks must go to Hugh Torrens for his help, encouragement and advice, and for his initial suggestion of the project. He was also responsible for most of the research. I am thankful too Robert Moore, Archaeologist at Northampton Museum for his invaluable assistance whilst the project was in progress, and for fruitful discussions with him since. Mike Jones of Leicestershire Museums critically read the manuscript and gave helpful advice.

John A. Cooper,  
Leicestershire Museums

#### IMPORTANT

I should be pleased to hear from anyone who believes that further material should be present in the Northampton Collections. Some important material may very easily remain unrecognised. Searches could not be exhaustive, either, of the literature or the specimens themselves.

J.A.C.

APPENDIXCOLLECTIONS AT NORTHAMPTON

The Northampton collections contain several very important collections which have often been referred to in the scientific literature. A fuller account of these collections and as full a list of type or figured material now recognised as possible will be presented elsewhere.

The Palaeozoic contents of the Northampton Museum are probably the least important of the Museum, but paradoxically they are the part best described. In a series of three papers (sadly never completed) by Beeby Thompson and T.J. George the Silurian/Carboniferous collections were catalogued.

A catalogue of the Geological Collection in the Northampton Museum:

Part I	Silurian	pages 39-46	1 plate
	II	Old Red Sandstone and Devonian	pages 154-158
	III	Carboniferous	pages 240-245

all in J. Northants Nat. Hist. Soc. vol. 3 1884-5.

COLLECTORS REPRESENTED AT NORTHAMPTON1. Samuel Sharp 1814-1882

- Obituaries: i) Geol. Mag. 1882, 144  
 ii) Q.J.G.S. 1882, 38, 53-54  
 iii) J. Northants Nat. Hist. Field Club 1883, 2,  
 71-73, 120.

He lived near Northampton from 1857 and gave material to the Museum. His collections were used by several of the early monographers of the Palaeontological Society. Woodward, A.S. (1904, p.323), Sherborn (1940, p.121) and Thompson (1928, p.9) record his collections as being divided between Mason College (Now the University of) Birmingham, BM(NH) - Iberian fossils and Northampton. H.B. Woodward (1894, p.57) says that Sharp's collection also included that of Dr. H. Porter (q.v.) of Peterborough by purchase. Sharp's donations made up the nucleus of the Northampton Museum collections of which Museum he was a founder. A nostalgic photo of him collecting in 1868 appears in B. Thompson, 1928

2. Spencer Joshua Alwyne Compton 1790-1851 Lord NORTHAMPTON, 2nd Marquis.

This originally fine collection was donated to the Northampton Museum in 1878 by the family and moved then from Castle Ashby. Sherborn (1940, p.35) stated "He was very liberal with his specimens so some may be elsewhere". Some certainly went to the Royal College of Surgeons (Quekett, 1856, p.xxiv) and some to Gideon Mantell with whom he exchanged specimens and who described Lord Northampton as "the most estimable and kind scientific friend I have" (Mantell, G.A. Journal ed. by E. C. Curwen, 1940, p.263 with many other references, see esp. 117-119).

But the majority came to Northampton Museum (J. Northants Nat. Hist. F.C. 1, 22). Robert Etheridge, palaeontologist to the Geological Survey, said of the collection (1880, p. 783) "This collection, almost unrivalled in value and in perfection of specimens, is scarcely equalled in the Kingdom ... I must specially notice a) The Cretaceous series truly valuable and fine, many of the specimens being unique (esp. Asteroids HST).

b) The Solenhofen slate series (approx. 200 specimens of fish, crustacea etc. A dragon-fly figured by Mantell, 1854, p.551).

c) The Oxford clay cephalopoda (presumably purchased from William Buy of Chippenham c. 1841 - mentioned also by H. B. Woodward, 1895, p.32. Includes Kosmoceras with fine lappets and belemnite with tentacular hooks. In 1841 S. P. Pratt named one of these Christian Malford ammonites after Lord Northampton).

d) Fine series of Devonian Corals, unequalled in any museum. (Great majority cut and polished - from Devon.)

In addition one may mention e) the large mineral collection already discussed and f) a historic collection of Plio-Pleistocene mollusca from the neighbourhood of Palermo, Sicily which we also unearthed. This collection was made by the Marquis who had a house in Palermo, at the instigation of Charles Lyell who recorded while there on January 6th, 1829 "I had not exhorted Lord Northampton in vain to collect fossils, his old hobby, and he has already got some and taken full instructions". K. Lyell, vol. 1, p.230, 1181. Some Italian Tertiary shells were also presented to the BM (NH) in 1831 by Lord Northampton, (A.S.Woodward, 1904, p.315). Gideon Mantell (1850, p.149) also records this Sicilian collection "The cabinet of the Marquess of Northampton contains an extensive and unrivalled series of these fossils collected during his Lordship's residence at Palermo". In view of the importance of Lord Northampton's collections it is sad to discover it has been the subject of criminal neglect for so long.

As befits a man of his standing Lord Northampton corresponded widely with geologists and had specimens figured by many of them, including R. Murchison (at least one specimen figured in *Silurian System*, 1839); G.A. Mantell ("Lord Northampton's collection is very rich in Chalk star-fish and echinoids", 1850, p.125-6); Frederick Dixon (who figured specimens in his *Geology of Sussex*, 1st edition, 1850); James Sowerby (specimens figured in *Mineral Conchology*, 1812-1846); Edward Charlesworth (who figured a Jurassic asteroid in his *London Journal of Geology*); J.E.Gray (in the *Annals and Magazine of Natural History*, 1840); Edward Forbes (in the *Mem. Geol. Surv.*, vol. 2, 1848), etc. etc.

Obituary by C. Lyell, 1851 *Q.J.G.S.* 7, xxx-xxxi.

### 3. Beeby Thompson 1848-1931

An indefatigable worker who published extensively on Northamptonshire geology and many other subjects. For obituary notices see *Q.J.G.S.* 88, p.lxxiv-lxxv, 1932, and *J. Northants Nat. Hist. Field Club*, 26, 120-123.

He also made collections whilst a consulting geologist abroad between 1909-1920. Those from Peru and Colombia are now in the BM(NH) Sherborn, 1940, p.133. His English collections from the whole geological column, though the majority are local, all went to the Northampton Museum in 1922 when it was purchased by the Museum Committee, with the exception of about 200 specimens given to the Leicester Museum in 1914. A report on the Northampton Museum material by B. Thompson in *J. Northants Nat. Hist. Soc.* 25, 15-16, 106, 1929, stated it was "composed of some 10 - 15,000 specimens and is considered by competent authorities to include the best Lias collection in the country". Some of his material had been presented before 1834 (see Thompson & George, 1834, p.46).

A point of importance when working through this magnificent collection which has sadly been allowed to decay is that his entire collections of his annotated publications, MSS and maps on geology and other subjects are carefully preserved in the Northampton Reference Library (purchased in 1932) and allow many of his specimens to be correctly localised (see Brown, 1932, p.106-107). A large number of his specimens are those cited in his publications and several are figured by E. Wilson, S.S.Buckman, E. Walford, etc.

Obituaries: *Q.J.G.S.* 88, lxxxiv-lxxxv. 1932.

#### 4. John F. Bentley

Bentley lived in Stamford, Lincs and made an important enough collection of local fossils for it to have been listed by L. R. Cox and W. J. Arkell, 1948-1950, p. xxi in their list of the principal collections of Great Oolite Mollusca. But they were not able to trace it:

Morris and Lycett (1850, p.15) named a new species after Bentley - the "water-spider" of the Collyweston Slate Phyllochilus bentleyi. Of the three figured syntypes, only one was traced by Cox and Arkell, pl. expl. of p. III, possibly the other two were in Bentley's collection.

Some of Bentley's collection was found at Northampton though sadly mixed with the Beeby Thompson collection (3) of which it never formed a part. Bentley was a friend of S. Sharp (1) who acknowledged (1873, p.286) the use of fossils collected by Bentley and also p.278, 302, that some part of his (Sharp's) collection had been formed by Bentley. Whether the entire collection made by Bentley went via Sharp to Northampton is uncertain. Others to mention Bentley's collection are H. B. Woodward (1894, p.453-4); J.A. Douglas and W. J. Arkell (1932, p.133 - Cornbrash near Peterborough); J. Morris (1853, p.335) and H. Porter (1861, Geol. Peterborough, p.105 and pl. vii, fig. 3).

See also under A. W. Griesbach (8)

#### 5. Dr. Henry Porter 1832-1868

He published in 1861 his book "Geology of Peterborough" in which he acknowledges help from J. F. Bentley (4) on p.105 and pl. 7, fig. 3.

Sherborn (1940, p.109) records his Peterborough collections as in the GSM (see also Cox and Arkell, 1948-50, p.xxii). But Woods in addition (1891, p.xiv) and Woodward and Sherborn, (1890, p.xv) record the purchase by the SM of Oxford Clay Saurians from his collection in 1866. H. B. Woodward (1894, p. 517) records however that the collection of "Dr. H. Porter of Peterborough was purchased by S. Sharp". It is presumably this portion which has now been located in the Northampton Museum, sadly mixed with Beeby Thompson's collection as well.

Obituary Q.J.G.S. 25 xxxvi-xxxvii, 1869)

#### 6. Walter Drawbridge Crick 1857-1903

Crick published on the Jurassic of the East Midlands and W. Highlands between c. 1882-1893 (see Arkell, 1933, p.635, 367, 461, 652).

Sherborn who was a co-worker in some of his papers recorded his collection as (presented) to Northampton Museum in 1932 (1940, p.39). In fact his main collection was presented to the Museum of the Northamptonshire Nat. Hist. Soc. in 1930 (Chapman, 1931, p.85-86 -- with details of the collection) where it is still preserved (G. Osborn in lit. 9.4.71). The Northampton Central Museum does possess a small collection of small fossils (forams many figured and gastropods) mounted on microscope slides and safely preserved in a small case (Thompson, 1929, p.15-16), and he also presented some material before 1884 see Thompson and George, 1884, p.46. Some of Cricks collection also went to the GSM (Bedford Gravels and Cornbrash Echinoids purchased 1896 per dealer F. H. Butler).

Obituaries: P.G.A. 1903  
 Q.J.G.S. 60 lxxx  
 Geol. Mag. 1904 144. (Bibliog.)  
 and see Chapman, 1931.

#### 7. Thomas Jesson 1850-1928

A. S. Woodward (1904, p.300-301) records the dispersal of his collections. Some went to the BM (NH) (see also Sherborn, 1940, p.75 and Sawyer, 1971, p.146), some to the GSM, purchased 1890-1892.

The great majority of his Northampton material was purchased by the Northampton Museum in 1892 for £40 (see Beeby Thompson's obituary notice below). This included some fine Great Oolite specimens including several fish described and figured by A. S. Woodward, and an ammonite as well as some fine Northampton Sands ammonites (H. B. Woodward, 1894, p.185) including some types, see also B. Thompson, 1928, p.237.

Obituaries: Q.J.G.S. 85 LXVI-LXVII, 1929.  
 J. Northants Nat. Hist. Field Club, 25, no. 198, 49-50,  
 1929 by B. Thompson.

#### 8. Rev. Alexander William Griesbach 1807 -

H. B. Woodward 1894, p.517 mentions his collection as having been purchased by W. H. Hudleston (1828-1909). Cox and Arkell, 1948-1950, p.xxii mention Middle Jurassic collections of his in the BM (NH) and GSM, whereas Hudleston's main collection went to the SM. Obviously Griesbach's collections were widely dispersed, since some of his collections were also found in the Northampton Museum, i.e. Cornbrash and Tertiary Mollusca.

Biog:- Griesbach collected especially from the area of Wollaston and Rushden, H.B. Woodward, 1894, 396, 452. He was curate of Wollaston at least



from 1852-1862 (Venn. J. A. Alumni Cantab. pt. II, vol. 3, p.149, 1947). He published between 1833-1837 in the Entomologists Magazine and entomology seems to have been his first love. His collecting in Northamptonshire is especially thanked by Thomas Wright, 1857-1878, p.viii, 119, 210, 238, 245, 337, 340, 394, 1868-1880, p.154 and Thomas Davidson, 1851, p.17, 58, etc. (including a species named after J. Bentley (4)).

9. Thomas J. George 1856-1920

Curator of the Northampton Museum for some years .. contributor to the Victoria County History of Northamptonshire, Fellow of the Geological Society, and Hon. Sec. of the Geological Section of the Northants Nat. Hist. Soc.

James Carter (10) described decapod specimens collected by T. J. George from the Oxford Clay of St. Ives, Huntingdonshire, Q.J.G.S. 42, 542-559, 1886. Polyzoa collected by George were also described by G. R. Vine in:

- i) J. Northants Nat. Hist. Soc. 4, 202-211 and pl. 1, 1886. Jurassic Polyzoa in the Neighbourhood of Northampton.
- ii) J. Northants Nat. Hist. Soc. 5, 1-24, 1888. Polyzoa of Caen and Ranville (Normandy).

Much of this material has been located ready for recuration (see also J. Northants Nat. Hist. FC, 20, 132-134).

Other collections formerly at Northampton but not yet identified:

10. James Carter 1813-1895

Some recorded here by B. Thompson and T. J. George, 1884, p.46. Woods, 1893, p.112, records portions of his collection at SM.

Obituaries: Geol. Mag. 1895, 479-480.

Q.J.G.S. 1896, 52, lxxi-lxxii.

H. S. Torrens

References, see page 59.

### 3. YORKSHIRE MUSEUM

The Yorkshire Museum was founded in 1822 to ensure that a selection of bones from the recently discovered Kirkdale Cave would remain in Yorkshire and, as recorded in this statement issued by the Council of the Yorkshire Philosophical Society in January 1823:-

"The more particular object of the Society is, to elucidate the Geology of Yorkshire ... Towards the illustration of this subject, the Society presume to hope that something may be done, by the combined observation of many individuals, in their respective neighbourhoods, and by a contribution of Specimens from every part of Yorkshire to a Central Museum."

Among the first Honorary Members of the Society were Buckland, de la Beche, Conybeare, Murchison, Sedgwick and Wm. Smith, and in 1823 John Phillips was paid £20 to arrange the collections. In 1826 he was appointed as Keeper, at a salary of £60 p.a., to work 4 days a week for 8 months of the year, a post which he held until 1842.

The first catalogues for this period show a wide range of fossils and minerals being acquired by gift, purchase and exchange from many well-known geologists. Thus in 1825 the mineral catalogue records the acquisition of a collection of approximately 200 mineral specimens from localities such as Freiberg, Saxony; Siberia; Hungary; Dauphine, France; Coquimbo, Chile; and Franklin, New Jersey, from H. Heuland; and of a range of almost 200 specimens "purchased by order of Council in N. America".

The first catalogue of fossils, by John Phillips, is dated January 1st 1823 (? back-dated) and starts with 140 specimens of saurian remains from Whitby "purchased of Brown Marshall", the first Kirkdale Cave specimens being mentioned several pages later. By the end of 1823 he had catalogued almost 2,500 specimens, and by the end of the volume "closed Jan. 27, 1825 G.G." 5,233 specimens had been entered.

Since then well over 100,000 palaeontological specimens have been acquired by the Museum. The list given here mentions only the larger collections; many of the smaller acquisitions are probably also of interest, and we would hope eventually to have this information to hand.

"Old Museum Collection". c. 50,000 specimens. This was formed under the guidance of John Phillips, Edward Charlesworth and others from 1823 up to the 1880's, and includes all the small collections not listed here separately. It gives a fairly complete and detailed coverage of British

fossils with emphasis on Yorkshire specimens, and includes some figured by Tate and Blake, Phillips, and others. A certain amount of foreign material was acquired, but has recently been disposed of. Unfortunately some of the catalogues and general museum accession books for this period have been lost.

Edward Charlesworth. Collection of c. 1,000 specimens of Tertiary, Chalk and Mountain Limestone fossils donated in 1845. E.C. was Keeper of the Museum for over 10 years from 1844, later he became a dealer in fossils and helped Wm. Reed to form his collections (please see note at the end of this article).

William Bean, of Scarborough. 5,000 specimens (one-third of his collection) was purchased in 1859, for £200, before his death. This includes specimens figured by Young and Bird, and by John Phillips.

John Bainbridge. c. 1,000 specimens, mainly Yorkshire specimens, purchased in 1861 for about £400.

John Francis Walker. c. 500-1,000 specimens, donated at various times between 1863 and 1907. J.F.W. was curator of geology here from 1893-1907.

T. P. Barkas. c. 200 specimens of fossil fish from the Northumberland Coal Measures, acquired in 1868.

James Cook, of York. c. 2,000 specimens, mostly from Yorkshire, purchased in 1872, after his death. The catalogue, dated 1872, is signed E. C. Middowson.

W. Fox, of Hotham Hill. c. 500-1,000 specimens of Pleistocene mammal remains from Bielbeck, E. R. Yorks, donated in 1873.

Rev. J. F. Blake. c. 500 specimens of Yorkshire Lias fossils, donated in 1874.

William Reed of York. c. 47,000 specimens of important material covering most localities and fossil groups in the British Isles (the Irish material is now in the Ulster Museum). Donated by W. R. from 1878-1891. We have correspondence between W. R. and Edward Charlesworth, who was by then a dealer, including detailed descriptions and catalogues of some of the material. All the material is reasonably labelled, and includes specimens figured by S. V. Wood, F. W. Harmer and others. W. R. was curator of geology here from 1873-1891. This collection includes:-

Baker, of Woodbridge. A collection of Crag fossils from Suffolk, purchased by W. R. from E. C., who prepared very detailed catalogues in 1875. Donated to the Yorkshire Museum by W. R. in 1878.

Whincopp, of Woodbridge, Suffolk. Crag fossils, Suffolk. "an immense collection" (E.C.) Purchased by W. R. for over £200 in 1871, donated to the Yorkshire Museum in 1878. Letters and detailed catalogue prepared by E. C. in 1875.

Etheridge. About 850 specimens donated to the Yorkshire Museum by W. R. in 1878. There is a catalogue, dated 1885.

W. Horne, of Leyburn. Donated in 1879, this collection includes specimens figured by J. W. Davis.

Edward Wood, of Richmond. c. 10,000 specimens, mostly Carboniferous Limestone fossils from Northern England. A very important collection which includes specimens figured by de Koninck and Davidson, it was bought and donated by Wm. Reed in 1880. The British Museum had hoped to obtain this collection, and in the back of the catalogue there is the following letter, on B.M. notepaper "15 December, 1880. Dear Mr. Reed, As you are now in the possession of the Edward Wood collection I send you the catalogue. It cost me some time and trouble and although done with to all else it may be acceptable to you. Yours very Truly, Henry Woodward."

Rev. J. E. Cross, Appleby, Lincs. c. 500 specimens of Lincolnshire and Yorkshire fossils, donated in 1891.

Elwes. c. 2,500 specimens of Tertiary fossils. An important collection bought by Wm. Reed, and bequeathed by him to the Museum in 1892.

Sir Charles Strickland, of Malton. "a large collection" of Yorkshire Jurassic fossils bequeathed by him in 1909.

Sir William Herbert Herries and Mr. R. S. Herries. c. 5,000 specimens. A very comprehensive collection of Yorkshire Coast fossils. Labelled only by abbreviations which refer to a map of localities, this collection is so far uncurated and in poor condition, although it is believed to contain some important material. It was donated by R. S. H. in 1939 after the death of his brother. There are 4 maps of localities, and the catalogues.

The palaeontological collections of the Yorkshire Museum therefore contain somewhere over 100,000 specimens, with over 700 Type and Figured specimens, including the following groups:- plants (figured by Lindley and Hutton, A.C. Seward, T. Harris); sponges (Hinde); corals (A. Bell, J. Phillips); echinoderms (T. Wright, J. Wright, de Koninck); crustacea (H. Woods); insects (Westwood); polyzoa (Gregory); brachiopoda (T. Davidson); lamelli-branches (W. J. Arkell, J. Phillips, A. Bell, S. V. Wood, Wheelton Hind); gastropods (S. V. Wood, F. W. Harmer, W. H. Hudleston, A. Bell); cephalopods (J. Phillips, A. Pavlov and G. W. Lamplugh, W. Arkell); fish (J. W. Davis, A. S. Woodward, L. Agassiz); reptiles and birds (H. G. Seeley) and mammals (E. Ray Lankester, E. T. Newton) and many others.

Copies of Melmore's catalogue of 1941 are still available from the Museum (FREE) and a new catalogue of Type and Figured material is being prepared for publication in the Proceedings of the Yorkshire Geological Society (Part 1 is now with the printers).

Among the more well-known geologists associated with the Museum as Keeper or Honorary Curator we find John Phillips, Edward Charlesworth, J. F. Walker, Tempest Anderson, W. H. Hudleston, W. Keeping, H.M. Platnauer, W. Johnston, C. E. N. Bromehead and S. Melmore.

#### EDWARD CHARLESWORTH 1813-1893

Born at Clapham, Surrey. 1835 elected F.G.S., and Honorary Curator of Ipswich Museum, 1836 joined the British Museum. 1837, appointed Assistant to the Museum of the Zoological Society of London, and as Editor of the "Magazine of Natural History". Appointed to York in 1844. In 1846 he started the "London Geological Journal". In 1858 he became a geological dealer down in London, retiring eventually to Saffron Walden. His particular interest was in Crag fossils. I would be very interested to hear from anyone who has any information, letters, etc. from or about E. C. He seems to have been a fascinating character who unfortunately had a "somewhat contentious disposition". He was very involved in the moral reforms of the period, but was too outspoken for the climate of opinion in York.

Barbara J. Pyrah,  
Curator of Geology,  
Yorkshire Museum,  
Museum Gardens,  
York.

NOTES ON SOME YORKSHIRE MUSEUM COLLECTORS

1. John Phillips 1800-1874

Biog. detail see J. W. Davis 1889. Proc. Yorks. Geol. Polytech. Soc. 10, 119-135.

T. Sheppard 1934 Proc. Yorks. Geol. Soc. NS 22, 153-187.  
for fate of a portion of his collection see C. D. Sherborn, 1940, p.107,  
apart from a little material at York some are preserved at the Oxford Univ.  
Museum and the Geol. Survey Museum, see L. R. Cox and W. J. Arkell, 1948-1950,  
p.xxii.

Phillips largely guided the building up of the early geological  
collections of the Yorkshire Museum.

2. Henry Heuland ?1777-1856

Biog. detail see H. B. Woodward History of the Geological Society of  
London, 1907, 72-73; for numerous sales of his collections of minerals,  
1830-1893 see C.D. Sherborn, 1940, p.69. He was a mineral dealer.

3. Brown Marshall fl. 1824-1876

"Well known fossil collector and dealer of Church Street, Whitby".  
H. B. Browne, 1949. The Story of Whitby Museum, p.10.

C. D. Sherborn, 1940, p.91 says "Collection is in Whitby Museum".

H. B. Browne op. cit. p.9-19 refers to several of his specimens there.  
One type Plesiosaur is at Harvard. The Yorkshire Museum material of his  
collecting is referred to in S. Melmore, 1942-3, pp.327-332.

4. William Bean II 1787-1866

Biog. detail see N. F. McMillan & E. F. Greenwood, 1972 The Beans  
of Scarborough; a family of naturalists. J. Soc. Bibliography Nat. Hist  
6, pt. 3, 152-161.

For fate of his other collections see A. S. Woodward, 1904, p.265.

L. R. Cox & W. J. Arkell, 1948-1950, p.xxi.

5. Edward Charlesworth 1813-1893

Biog. details see Geol. Mag. 1893, 526-528.

Q.J.G.S. 50, 47-50, 1894.

Since in later life he was a most active dealer in fossils his  
collections are widely dispersed. For those formerly at Liverpool (now  
destroyed) see T. J. Moore, Proc. Liverpool Geol. Soc. 1, 34, 1864.

6. John Francis Walker 1839-1907

Biog. details see Geol. Mag. 1907, 380-384.

Much of his fossil brachiopod collection (his main interest) is in the BM (NH). Other collections are in the Sedgwick Museum and Geol. Surv. Mus. L. R. Cox & W. J. Arkell, 1948-1950, p.xxiii.

7. T. P. Barkas 1819-1891

Biog. details see Geol. Mag. 1891, p.576.

Q.J.G.S. 48, Proc. 55, 1892.

Other collections at BM (NH) and Newcastle-on-Tyne, see C. D. Sherborn, 1940, p.13 and A. S. Woodward & C. D. Sherborn, 1890, p.xi.

8. Rev. John Frederick Blake 1839-1906

Biog. detail see Geol. Mag. 1906, 426-431.

Other collections at BM(NH) and GSM, see Cox & Arkell, 1948-1950, p.xxi and Sherborn, 1940, p.19.

9. William Reed 1810-1892

Biog. detail in Geol. Mag. 1892, 283-286, reprinted from Yorkshire Herald, May 10, 1892.

10. Robert Etheridge 1819-1903

See Obituaries in Geol. Mag. 1904, 42-48

Q.J.G.S. 60, 1904, p.LXVIII.

See A. S. Woodward, 1904, p.287 for an earlier collection in BM (NH).

11. William Horne ?1837-?1929

See Obituary in Q.J.G.S. 85, 1929, LXVI.

For his collections in BM(NH) see A. S. Woodward, 1904, p.299.

12. Edward Wood 1808-1877

See Obituaries in Geol. Mag. 1877, 480, also Geol. Mag. 1891, 96, 1892, 285.

See Sherborn, 1940, p.145 and A. S. Woodward, 1904, p.338 for details of other collections elsewhere.

13. Rev. John Edward Cross 1821-1897

See Obituaries in Geol. Mag. 1897, 192

Q.J.G.S. 54, lvii, 1898.

Cox & Arkell, 1948-1950 p.xxi and Sherborn, 1940, p.39 record other collections at GSM (see J. F. Blake, 1902, p.25, for their original donation) and Scunthorpe Museum.

14. (a) Sir William Herbert Herries 1859-1923

See Obituary in Q.J.G.S. 80, LV-LVII. 1924.

(b) Robert Stansfield Herries 1860-1941

See Obituary in Q.J.G.S. 98, LXXVI-LXXVII, 1943.

15. J. W. Elwes who published on the Tertiary of the Hampshire Basin in the Geol. Mag. 1883-4 and presented other fossils to the BM (NH) in 1890 (A. S. Woodward, 1904, p.286).

16. and 17. James Baker and W. Whincopp, both of Woodbridge.

For disposal of collections see A. S. Woodward and C. D. Sherborn, 1890, p.xviii-xix.

H. S. Torrens.



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the Oolitic Formations. vols 1 - 2. Pal. Soc. Monogr.
- \*BLAKE, J.F. 1902. List of the types and figured specimens in the  
collection of the Geological Society of London. London.

INFORMATION GATHERING

G.C.G. has a constitutional obligation to initiate and conduct surveys relating to its stated aims which are all directed at improving the status of geology in museums and related institutions. We are also specifically committed to provide information and advice on all matters relating to geology in museums. This really is a very tall order when one considers the sparseness and fragmentation of what literature there is relating to geology in museums.

The Committee, having organized its method of operation, decided the programme of meeting for the year and floated the first Newsletter, has now settled to considering what the Group should undertake in the information gathering role. It was realized almost at once that the work would be important and demanding and it was also obvious that the Secretary could not reasonably be expected to take charge of it alongside his secretarial duties and to perform effectively in both. For this reason the creation of a new post of Recorder was proposed and to ensure that work commenced with the minimum delay it was decided that an existing member of Committee should occupy it for the present. This job has fallen to me and since our data collecting, par excellence, will be an exercise in communication, I have prepared this note to give members some idea of the present position.

At the Committee meeting held in Sheffield on 30th August it was decided to form a sub-committee of four instructed to examine the scope of information which we might gather with the intention of presenting a report and recommendations to the Committee at some future meeting. By the time of the meeting at the Geological Museum on 18th October it was possible to present the range of ideas submitted by members of the sub-committee and a report is in course of preparation now. The ideas fall fairly comfortably into three major groups A, B and C.

A. THE STATE AND STATUS OF GEOLOGY

1. The compilation of a register of:

- (a) existing curatorial, technical and educational geology POSTS in museums and related institutions. The register would include such information as the grading of posts and the conditions of service attached to them.
- (b) posts not entirely geological but carrying some geological responsibility.

Item 1 will demand data for other museum disciplines for useful comparisons.

2. Compilation of a name register of GEOLOGISTS working in museums and related institutions in the British Isles. The register would be kept continually updated so that individual geologists could be quickly and easily located. This register could also include such information as special interests and willingness to assist in general museum rescue work of geological nature.
3. A file of professional information on geological collections in Museums, etc. to include such items as size, relative significance, strengths, weaknesses, state of accessioning of documentation, methods of accessioning, methods of storage, accessibility, condition of material, facilities available for study etc.
4. A file giving some measure of user pressure on collections.

#### B. GENERAL CURATORIAL INFORMATION

1. Information on major geological institutions indicating the scope of their activities and the range of professional services they offer. The kinds of institutions mentioned were Geological Survey, Soil Surveys and the British Museum (Natural History).
2. Lists of authorities and firms prepared to assist museum staff in the identification of material (this information relates, at least in part, to A2 above).
3. Lists of sources of geological material for purchase and exchange.
4. Lists of suppliers of materials and equipment for geological curatorial and technical work.
5. A file of materials and reagents of particular interest or importance to geology technicians, continually updated.
6. A list of laboratories conducting C14 and other dating and offering an outside service.
7. Collaboration with the Manuscript Survey to produce a list of manuscript sources relating to geologists and geological collections currently being undertaken by Gavin Bridson and Anthony Harvey.
8. Collaboration with the Museums Association on a current project to collect geological curatorial literature.
9. Register of museums with technical facilities indicating the range of equipment in each and services on offer to colleagues.

### C. USER INFORMATION AND SERVICES

1. A comprehensive file of information about past and present collectors indicating major fields of geological and regional interest, collections located, collections unaccounted for, facsimiles of handwriting, peculiarities of accessioning procedures likely to aid in identifications of specimens or documents, portraits or location of known portraits. It has been suggested that this file should include living collectors to pre-empt the kind of difficulties which have become routine when working on early collectors. Collaboration at all stages with the project in progress under Ron Cleevely.
2. Lists of specialized collections such as meteorites, palaeobotany, Pleistocene vertebrates, marine reptiles, micropalaeontology, various mineral groups etc.

A number of suggestions were also received not directly relevant to the work of the Recorder but which deserve the Group's consideration. They are:-

1. The design of a standard museum geology storage drawer as a basis of a versatile system of specimen storage meeting all fundamental storage requirements. A manufacturer might then be interested in the possibility of adopting such a unit as a commercial venture.
2. The rewriting of North's "Geology in Museums" with several contributors providing chapters on their specializations.
3. The reprinting of Murray's "Museums; their history and their use".

It would be wasteful to duplicate effort and obviously we will support any work in progress in any way we can. There are also several projects such as B1, B2, B3, B5, etc. which are not likely to involve major resources to complete them. However, eliminating both these categories the number of projects remaining is greater than the resources of time and manpower the Group has available, and there are likely to be some equally deserving and important schemes not mentioned here which members will no doubt inform me of. In this situation the information gathering programme must inevitably be selective, at least for the first few years, and any member of the Group who has strong views on priorities is invited to inform the Committee of them.

Careful thought must go into the scope of each project adopted. We do not wish to compete in any way with other current projects but to wholeheartedly collaborate.

It is hoped that all members will play their part when schemes are operating but this piece is intended to inform, to elicit ideas and provide the opportunity for comment. Anyone wishing to do any of these things should contact me, or another Committee member promptly.

P. Doughty,  
Ulster Museum,  
Botanic Gardens,  
BELFAST BT9 5AB.

NEXT!

I thought that I would like to see  
The early world that used to be,  
That mastodonic mausoleum,  
The Natural History Museum.  
At midnight in the vasty hall  
The fossils gathered for a ball.  
High above notices and bulletins  
Loomed up the Mesozoic skeletons.  
Aroused by who knows what elixirs,  
They ground along like concrete mixers.  
They bowed and scraped in reptile pleasure,  
And then began to tread the measure.

There were no drums or saxophones,  
But just the clatter of their bones,  
A rolling, rattling carefree circus  
Of mammoth polkas and mazurkas.  
Pterodactyls and brontosaurus  
Sang ghostly prehistoric choruses.  
Amid the megalosauric wassail  
I caught the eye of one small fossil.  
Cheer up, old man, he said, and winked -  
It's kind of fun to be extinct.

Ogden Nash

FOOD FOR THOUGHT FOR THE A.G.M.

Half-a-word fixed upon, or near the spot, is worth a cart-load of recollection.

GRAY.

quoted in H. T. de la BECHE

How to Observe Geology 1835.

GEOLOGICAL COLLECTIONS AT U.C.W. ABERYSTWYTH

The following papers describe collections of fossil material at U.C.W., Aberystwyth:-

- Challinor John. 1945. A graptolite lineage from North Cardiganshire Geol. Mag. vol. LXXXII, pp. 97-106. (figured and unfigured material).
- Lamont Archie. 1940. Derived Upper Llandovery Fossils in Bunter Pebbles. Cement, Lime and Gravel. vol. 15, pp. 26-30. (figured and unfigured material).
- Lewis, H.P. 1934. The Occurrence of Fossiliferous Pebbles of Salopian Age in the Peel Sandstones (Isle of Man). Summ. Prog. Geol. Surv. for 1933, Part II, pp. 91 to 108. (some figured thin sections).
- Lewis, H.P. 1935. The Lower Carboniferous Corals of Nova Scotia. Ann. Mag. Nat. Hist. ser. 10 vol. XVI, pp. 118-142. (some figured thin sections).
- Lewis, H.P. 1937. Calcareous Algae (Ortonella and Rhabdoporella) in the Llandoveryan Rocks of Wales. Ann. Mag. Nat. Hist. ser. 10, Vol. XX pp. 617-623. (figured and unfigured material).
- Lewis, H.P. 1940. The Microfossils of the Upper Caradocian Phosphate Deposits of Montgomeryshire, North Wales. Ann. Mag. Nat. Hist. Ser. 11 vol. V, pp. 1-39. (figured and unfigured material).
- Whittard, W.F. & Barker, G.H. 1950. The Upper Valentian Brachiopod Fauna of Shropshire, Part I. Ann. Mag. Nat. Hist. Ser. 12, vol. iii, pp. 553-590. (specimen CC71 - syntype of Mendacella challinori var. inflata Lamont 1940 (see above) is figured in this paper. The specimen is in Aberystwyth).
- Wood, Alan 1949. The Supposed Silurian Foraminifera from Cardiganshire. Proc. Geol. Assoc. vol. 60 part 3. pp. 226-228. (some of this material was originally figured by W. Keeping in Geol. Mag. 1882).

There is probably a lot of other material not yet found. Also not listed is recently figured material, e.g. Bates, D.E.B., Geol. Mag. vol. 111, 1974, that is said to be at Aberystwyth.

There are also a large number of microfossils that have been figured over the years.

Antony Wyatt  
(Curator)

COLLECTIONS AND INFORMATION LOST AND FOUND

Since the article in the first G.C.G. newsletter two further sources for scientific biography have been noticed, both of which will lead to biographic details for geologists and then hopefully some clues about their collections. They are:

(a) E. Scott BARR. 1974

An index to Biographical Fragments in Unspecialised Scientific Journals, Alabama Univ. Press, pp. ix and 294.

(b) S. SHAPIN & A. THACKRAY, 1974

The British Scientific Community, 1700-1900.

Hist. of Sci. vol 12, pp. 1-28. Pages 14-21 detail biographic sources which can be tried when those given in the G.C.G. article 1, pp. 12-17 have been exhausted.

A. COLLECTIONS PREVIOUSLY SOUGHT

1. S. R. Pattison see G.C.G. 1, p.17.

The main interest of S. R. Pattison's collection of fossils is that both Sir Henry de la Beche and John Phillips used it when writing up their "Geology of Cornwall, Devon and West Somerset 1839" and the latter when writing "Figures and Descriptions of the Palaeozoic fossils of Cornwall, Devon and West Somerset, 1841".

Pattison early on drew attention to the fossils of the Petherwin limestone, S.W. of Launceston, Devon of the Upper Devonian. He placed his collections at the disposal of de la Beche (1839, p.59-60) and Phillips (1841, p.vi and 196). Presumably the repeated searches Sherborn (1940, p.105) made were to locate Pattison specimens figured by Phillips (op. cit.). Phillips doesn't normally say in his specific descriptions in whose collections the described specimens were, so the job of tracing them to their present hiding places is not at all an easy one. An annotated copy of Phillips 1841 work in the library of the Somerset Archaeological and Natural History Society has notes about figured specimens then located in the I.G.S. and B.M. (N.H.) collections. But the author of the annotations and their date have not been discovered.

Pattison published a book in 1849 "Chapters on Fossil Botany" which is not of any taxonomic interest. He did contribute numerous papers to the journals of the Royal Institution of Cornwall, Truro and the Royal Geological Society of Cornwall, Penzance. In a letter by him in the Geologist, vol. 2



p.177, 1859 on the subject of local Museums the collections of both these Cornish institutions are stated by him to have contained good Devonian collections especially at Penzance, but he makes no mention of his own collections specifically. One wonders if Sherborn tried these places? Perhaps present curators at these institutions or others could help us.

In this letter Pattison refers to the importance of local museums for the illustration of local geology but how rarely they did so. It is thus poignant to discover that some of his fossils have turned up in far away Leicester. Pattison resigned his fellowship of the Geol. Soc. some years before his death and the date of the accessions at Leicester over 1891-1893 may indicate the date of the dispersal of his collections then or some part of them rather than a dispersal at his death in 1901.

for Obituary	see	Q.J.G.S. <u>58</u>	p.lxii	1902
Notices		Geol. Mag.	p.48	1902

3. Joseph Townsend see G.C.G. 1, p.18.

Townsend's collection, presumably including the fossils figured on the 21 plates in his work "The Veracity of Moses" in 1813, was dispersed at auction. The sale was held at Mr. King's auction rooms, 38 King Street, Covent Garden, London over April 11 - 13, 1819, some years after his death on November 6th, 1816. Thus one of the very earliest scientifically arranged fossil collections in Britain was dispersed. A sale catalogue survives. Two months later, 15 - 19 June, a similar fate at the same place befell the collections of palaeontological and conchological material belonging to Townsend's friend William Broderip of Bristol which also contained fossils figured in Townsend's book mentioned above

5. Wyville Thomson see G.C.G. 1, p.18.

Figured specimens now located at the Oxford University Museum which were illustrated in J. W. Salter's "A Monograph of the British Trilobites" Pal. Soc. 1864-1883 are stated in text and plate explanation to be in Prof. (Wyville) Thomson's cabinet.

e.g. Salter pl. 30 fig. 2 (OUM Reg. No. C.4)  
                   30 fig. 3 (OUM Reg. No. C5)  
                   30 fig. 4 (OUM Reg. No. C2)  
                   30 fig. 6 (OUM Reg. No. C6)  
                   30 fig. 8 (OUM Reg. No. C3)

The same monograph figures other trilobites also then in Wyville Thomson's cabinet, e.g. pl. 7, figs 22-25 which are of the same species

(and perhaps specimens) as some described by Thomson in his 1857 paper;

- e.g. Salter pl. 17 fig. 22 (OUM Reg. No. B4/5)  
 23 (OUM Reg. No. B3)  
 25 (OUM Reg. No. B1)

pl. 18, fig. 9 also in Wyville Thomson's collection is not apparently at Oxford.

All this information is recorded in J. M. Edmonds "Types and figured specimens of Lower Palaeozoic Trilobites in the University Museum, Oxford". Geol. Mag. 86, 57-66, 1949.

Whether the OUM contains the material figured in Thomson 1857 paper is not yet known, but it certainly contains some of Thomson's best material.

H. S. Torrens

All information should be sent initially to Dr. H. S. Torrens, Geology Department, Keele University, Staffs. who will record and co-ordinate it and pass it on.

## B. COLLECTIONS OR INFORMATION CURRENTLY SOUGHT

### 7. Captain R. B. Bennett

I am at present describing a fossil fauna with remnant pigmentation patterns largely drawn from the Grainger Collection housed in our own department. The handwriting on the labels of these specimens, and several thousand others in this collection, is not Grainger's and has been traced from the initials R.B.B. on an annotated label to a Captain R. B. Bennett. One specimen in the collection, a Pernopecten sowerbyi has been identified as the specimen figured in W. H. Baily's "Figures of Characteristic British Fossils with Descriptive Remarks" London 1875, Plate 39, figure 3. The following sentence appears in the figure description - "These beautiful fossils were collected by Captain R. B. Bennett, from the Carboniferous Limestone of Kildare, and are partly in his collection, and in that of the Rev. John Grainger, D.D., Broughshane, Ballymena."

Clearly at least part of Bennett's collection became incorporated into Grainger's but if anyone knows of other Bennett specimens or can give any information of any kind about him, I would be pleased to hear from them. On the basis of the specimens we have, the bulk of his collecting was done in the Carboniferous Limestone of Counties Kildare and Dublin, and the Jurassic Oolites of the west of England, particularly in the vicinity of

Cleeve and Leckhampton Hills. The main period of activity seems to have been between 1850 and 1880. A facsimile of his handwriting can be provided on request.

Philip Doughty

#### 8. Portraits of J. E. Portlock

J. E. Portlock (1794-1864) is the Captain Portlock of the famed "Report on the Geology of the County of Londonderry and Part of Tyrone and Fermanagh" 1843, who later became Major-General. The only portrait so far discovered is the photograph possessed by the Geological Society of London and figured in Close's "The Early Years of the Ordnance Survey" recently re-printed by David and Charles. If anyone knows of other portraits of him, particularly in early life, I would be very pleased to learn their whereabouts.

Philip Doughty

#### 9. Portraits of R. J. Griffith

R. J. Griffith (1784-1878) was Professor of Geology and Mining Engineering to the Royal Dublin Society from 1812, but is most famed for the various editions of his "Geological Map of Ireland". He has been called the "Father of Irish Geology" and his considerable attainments were later recognised by Knighthood. The only portrait so far discovered is that in the Dublin University Magazine Vol. 83, April 1874 facing page 432. If anyone knows of any others I would be very pleased to have the information.

Philip Doughty

TECHNICALA SYSTEM OF COLOUR CODING Pt. 2Thin Sections

Thin section labels can be colour coded to correspond with their associated specimens and also with a particular cabinet or collection. The system adopted at Keele fits in well with the normal practice of having two labels top and bottom. The bottom label bears the locality and any remarks in brief, whilst the upper label is subdivided:-

The bottom section is coloured completely to suit the cabinet or collection, thus blue is for the Mineral cabinet, yellow for the hard-rock cabinet, orange for the Subsidiary Course Collection, etc.

The centre section of the label (normally 2 lines) bears the description of the specimen - only rarely has it been found that a description is so long as to require a reduction in letter size.

The top section (top line) bears the accession number and the appropriate colour code (see G.C.G.N. vol. 1, p.23) in the form of a blob of quick-drying Humbrol paint.

This process is initially time-consuming but very worthwhile both for ease of location of thin sections and their return to the correct tray in the correct cabinet.

Brian Page,  
Keele University.

PNEUMATIC HAND TOOLS

Some laboratories may not be aware of the wide range of pneumatic tools available, or of their advantages over the better known electrically powered tools. This short note will indicate the range, and advantages, of the tools produced by just one manufacturer. The individual tools mentioned are ones which I have used personally. They are part of a very wide range manufactured by Desoutter for the engineering and automobile industries, but there are other manufacturers of course. Laboratories already equipped with an air compressor will need to make sure that (a) the working pressure delivered is high enough (about 80-100 p.s.i.) and (b) that the volume of air delivered (usually measured in c.f.m.) is sufficient. This varies over a wide range with compressors as do the requirements of various tools. One would also need to take into account the number of simultaneous uses. Many tools will benefit from an automatic oil lubrication system which can be cheaply and conveniently built into the system. Suppliers are normally very helpful about requirements and in making recommendations about the size and capacity of compressor which would be needed to power the range of tools selected.

As a rough indication of the initial capital outlay involved, a single stage compressor delivering 7-8 c.f.m. at 120 p.s.i. and driven by a two horse power electric motor will cost about £250. A three horse power unit, the largest that can be powered from a single phase electricity supply will deliver about 12-15 c.f.m. and cost around £400. Larger compressors will need a three phase supply and not many laboratories will have this. New laboratories should in any case make a point of specifying that a three phase supply be laid on because some of the larger machines used for geological purposes will require it. The compressor should have a large air receiver, i.e. storage tank, as this allows the air to cool and moisture to condense out. It will also provide a small reserve if the air requirements are as much as the compressor can supply. The actual amount of free air delivered by a compressor (f.a.d.) will be less than the quoted c.f.m. but for limited intermittent use the c.f.m. figure can be used as a guide. Note also that compressors are noisy and it will be necessary, if they are to run all day, that they be housed somewhere away from the laboratory.

Air bottles are not generally a reasonable substitute for a compressor except in the case of very light tools with low air requirements such as the VP 2 power pen mentioned below. In that case a standard B.O.C. compressed air bottle will operate it for 10 to 12 hours.

The first major group of tools can be taken under the heading of rotary tools. These would cover the range of normal electrical hand drilling machines and laboratory dental engines with flexible drives.

Hand Drilling Machines, (4-25 c.f.m., £27-£30). A wide range of choice is available with sizes from  $\frac{1}{4}$ " capacity chucks to  $\frac{1}{2}$ ", and can be supplied with stands to use as vertical drilling machines. Motors of various speeds are available and one should seek advice from the manufacturer's agents as to which would be most suitable for any particular range of requirements. In general these tools are at least as cheap as the electric ones, usually lighter, (1½-2 lbs) and in the long run safer, an important point, as electrical leads and connections can be damaged in time. High speed hand grinding tools (4½ c.f.m., £30), also belong to this group and here again a wide range is available. These are very much more convenient than the flexible drive tools. A diamond edge saw for cutting glass fibre and plastics is available at £50.

The second group of hand tools can be described as reciprocating and these include, in ordinary terms, hammers, chisels and punches. In this type of movement compressed air has great mechanical advantages over electricity and the tools are therefore much lighter, more efficient, and more convenient. Special mention should be made of the VP2 Power Pen,

6" long,  $\frac{1}{2}$ " diameter,  $\frac{1}{4}$  lb weight. This is a tool not much larger than a fountain pen designed for engraving information on metal and glass. It makes a marvellous job of removing matrix from fossils and is very cheap, £18. It is also many times more efficient at this work than the Burgess electrical engraver, delivering a heavier stroke and reciprocating faster. It has the further advantage of discharging exhaust air at the point blowing all loose material clear. A lot heavier than this but still not as heavy as most  $\frac{1}{4}$ " electrical hand drilling machines is the Zip Gun, (22). This tool is, in fact, a mechanical chisel of amazing efficiency. However, it does use a lot more air than the VP2 whose needs, at 3 c.f.m. at between 60-90 p.s.i., are very modest.

Finally a mention of a compressed air vacuum cleaner, very cheap (£16.50), and very convenient for light work.

The main point I raise is that laboratories should investigate for themselves the types of tools suitable for their use and consider acquiring the necessary compressor and tools. But be sure when choosing a compressor to seek advice on the amount of air required for your purpose, and any possible future expansion.

T. Bruton,  
Technician,  
Ulster Museum.

#### MOVIE CONTINENTS

During the Group's visit on October 18 to the 'Story of the Earth' exhibition at the Geological Museum, there was some discussion among a small group of us concerning animated displays illustrating past plate movements and continental drift. The exhibition, it will be recalled, makes use of a very short film illustrating only the break-up of Pangaea. Clearly a somewhat longer film showing continental movements at least throughout Phanerozoic time would be of greater interest to layman and specialist alike.

It may, therefore, be of interest to Curators planning the production of a global tectonics exhibit to know that an American student, Christopher Scotese, (Department of Geology, University of Illinois, Chicago), is currently experimenting in this field.

At a recent seminar at Oxford he described his techniques. Using published world maps showing former continental positions at past periods, average rates and directions of movements are calculated in order to obtain interpolated positions at ca. 120,000 yr. intervals. The use of a computer is, of course, essential, and this is also programmed to display the resulting

maps in any desired projection (Mercator, gnostic, equal area, etc.). The maps are recorded in chronological sequence on black and white cine film, one map to a frame. Some 4,000 maps, each requiring about 30 sec. computer time to draw, constitute a film which takes two to three days to make, which embraces the whole of Phanerozoic time, and which runs for three to four minutes. A digital 'clock' visible in a corner of the film, records the passage of time in millions of years, and the names of the geological periods are superimposed in succession. With a suitable projector, the film can be run forwards or in reverse.

It should be stressed that the work is still at an experimental stage, and films are not commercially available. The pilot film shown at Oxford contained some minor technical flaws and was based entirely on the world maps of Smith et al. (1973). Other existing maps may be preferable, and future research will undoubtedly lead to revisions and refinements of past continental coordinates. Nevertheless, the technique shows considerable promise, and it seems likely that this or similar material may become available commercially in due course. Such films would be invaluable as lecture room teaching aids and of great interest in museum exhibits. At a general level they could be used simply to illustrate the dynamic nature of the lithosphere. In more specialist exhibits they could be ornamented to show the distribution in space and time of former climatic zones, faunal provinces and geological environments of all kinds.

Smith, A.G., Briden, J.C. & Drewry, G.E. Phanerozoic world maps. In "Organisms and continents through time". Special paper 12. Palaeontological Association, London 1973.

G. B. Atkins,  
University Museum, Oxford.

#### Editor's Note

C. R. Scotese also showed his film at the Ordovician Symposium at Birmingham, held by the Palaeontological Society on September 17th - 20th, 1974.

#### INFORMATION WANTED

I would be grateful for any information as to a source of needles (in bulk) suitable for use in a hand-held Eclipse pin chuck. In the past I have used old-fashioned type gramophone needles, and these have been ideal for delicate work in fossil preparation. Unfortunately, such needles can no longer be obtained, at least in this region.

I would also be pleased to hear from anyone who has information on the long-term ageing characteristics of the inks used in ball-point pens.

R.G.Clements, Assistant Curator,  
Department of Geology,  
University of Leicester.

CORRESPONDENCEMining Documents

The Lofthouse Colliery disaster spotlighted, in the most tragic way, the lack of a full and systematically arranged archive of information on abandoned mines and workings. A body has been established to collect and organise all information relating to mining activities before 1900, but it has not received all the publicity it deserves, nor, so far as I know, has it made a direct approach to museums.

If your museum has plans, maps, notebooks, letters, fieldslips, photographs or other early documents relating to mining activities in the specified period, please send information to:

Appeal for Plans,  
Box 999,  
London SW1P 4QJ.

P. Doughty,  
Ulster Museum.

Lunatics as Curators

Having just read Hugh Torrens' fascinating article on Dr. Greene's Museum, in the first issue of the GCG Newsletter, I cannot resist adding a comment to his remark that W. H. Yates, because of his alleged mental inadequacy, was hardly an ideal curator: one meaning of the word curator is in fact "a person appointed to manage the affairs of a lunatic". Which, among the more irreverent junior members of the profession, may well raise the question, "Am I my keeper's curator?".

H. Raymond Singleton,  
Director of Museum Studies,  
University of Leicester.



EXCHANGE SERVICE1. ULSTER MUSEUM

List of amygdale minerals from the Tertiary (Eocene) Basalts of Northern Ireland, on offer in exchange for other minerals of similar quality (or for any suitable fossil or geological material).

Ref. G.C.G. 6/11/1974

<u>Mineral</u>	<u>Size of specimen</u> (cms)	<u>Locality</u>
analcite	11 x 8 x 7	Castlerobin, Lisburn, Co Antrim
analcite	16 x 11 x 10	Castlerobin, Lisburn, Co Antrim
analcite + brown dog tooth calcite	10 x 7 x 7	Castlerobin, Lisburn, Co Antrim
Chabazite + Brown dog tooth calcite	6 x 5 x 5	Castlerobin, Lisburn, Co Antrim
analcite crystal	4 x 2 x 2	Castlerobin, Lisburn, Co Antrim
analcite + brown dog tooth calcite	12 x 11 x 7	Castlerobin, Lisburn, Co Antrim
analcite + brown dog tooth calcite	25 x 12 x 10	Castlerobin, Lisburn, Co Antrim
analcite	13 x 12 x 8	White Mountain, Lisburn, Co Antrim
analcite	20 x 8 x 8	White Mountain, Lisburn, Co Antrim
chabazite	12 x 6 x 6	Hightown, Belfast
thomsonite and chabazite	9 x 6 x 3	Hightown, Belfast
thomsonite	15 x 10 x 5	Hightown, Belfast
thomsonite, calcite, chabazite	6 x 5 x 5	Hightown, Belfast
thomsonite, chabazite	16 x 10 x 8	Hightown, Belfast
thomsonite	11 x 8 x 6	Hightown, Belfast
levyne	7 x 7 x 4	Portmuck, Islandmagee, Co Antrim
levyne	8 x 6 x 5	Portmuck, Islandmagee, Co Antrim
pipe amygdales in basalt	17 x 13 x 8	Magheramorne, Larne, Co Antrim
natrolite (radiating fibrous)	10 x 10 x 7	Magheramorne, Larne, Co Antrim
natrolite (radiating fibrous)	10 x 6 x 5	Magheramorne, Larne, Co Antrim

Also some fine gmelinites, which are on offer, only in exchange for specimens of similar quality

gmelinite, chabazite	5 x 5 x 3	Magheramorne, Larne, Co Antrim
gmelinite	10 x 5 x 8	Magheramorne, Larne, Co Antrim
gmelinite	7 x 4 x 4	Magheramorne, Larne, Co Antrim
gmelinite	9 x 7 x 7	Magheramorne, Larne, Co Antrim

Those interested please contact: Kenneth James,  
Museum Assistant - Geology,  
ULSTER MUSEUM,  
Botanic Gardens,  
BELFAST BT9 5AB.

## 2. KEELE UNIVERSITY

### SAMPLES FOR EXCHANGE:

Granitic and other acid gneisses, both banded and augen types, from the LEWISIAN of Scotland.

Quartz-biotite-schist (metasedimentary) from the LEWISIAN of Scotland (Loch Maree Series).

Amphibolite (metamorphosed basic intrusives) from the LEWISIAN of Scotland.

Gneisses of various types both amphibolite-facies and granulite facies from Precambrian basement area of Britain, Scandinavia and Canada.

In exchange any specimens of the following would be appreciated:

1. Thermally metamorphosed banded iron
2. Kimberlite
3. Carbonatites.

Those interested please contact: Dr. J. Winchester,  
Geology Department,  
Keele University,  
Staffs. ST5 5BG.

BOOK REVIEWPaper

Thurmond, J.T., 1974: Polystyrene solutions as fossil hardeners; save money and recycle too. J. Paleont., 48, 1, p.195-1961

This paper describes the author's experience in the use of polystyrene solutions for impregnating and strengthening geological and (in particular) palaeontological materials. Either bought polystyrene granules or salvaged polystyrene waste can be dissolved in acetone, benzene, or toluene (a mixture of 1 lb granules/gallon benzene is mentioned). Solutions in acetone are said to have certain limitations, and most of the author's experience was gained with solutions in benzene. The solution is reported to penetrate well, and is said to give a great deal of strength to the specimen. Unfortunately, he does not compare the effectiveness of his polystyrene solutions in these and other respects with other solutions in standard use (such as P.V.A.). Does anyone have any information of this nature?

Thurmond reports the successful use of polystyrene solutions in benzene on wet bone material in the field.

The most obvious advantage of the technique is the relative cheapness and availability of the materials required.

R. G. Clements

Book

Dance, S.P. (Editor), 1974: The Encyclopedia of Shells  
Blandford, London. 288p, 1500+ colour photographs. £6.95.

Excellent value for those who come across the occasional exotic Recent mollusc in their collections. Whilst admittedly and of necessity incomplete, and not dealing with minute shells, the book will allow most specimens to be identified to at least generic, and in many cases to species level. If care is taken in getting a good copy, the colour illustrations are superb, and ideal for illustrating the diversity of shell form in the Mollusca - particularly gastropods and bivalves.

R. G. Clements

OTHER SOCIETIESTHE ASSOCIATION FOR THE PROMOTION OF AN INSTITUTION OF PROFESSIONAL GEOLOGISTS

In March 1974 the Geological Society published the Report of their Working Party on Professional Recognition which recognised that there was a case for the creation of a professional body of geologists in this country. As a consequence of this initiative a decision has been made, by a group of practising geologists, to proceed with the formation of The Association for the Promotion of an Institution of Professional Geologists. The Association will be regarded as an interim stage prior to the creation of a fully representative professional body for geologists. This decision has been made in the light of the response to questionnaires circulated earlier this year and the recognition that such a society would provide an environment within which there could be adequate opportunity for discussion and consultation prior to the establishment of a professional body.

The objects of the Association will be:

- (a) to promote the formation of an Institution of Professional Geologists, and
- (b) to advance the profession and practice of geology and allied disciplines; to maintain proper professional standards and ethics; to further the professional interests of its members; to disseminate information about geologists, geology and related fields of interest; to promote understanding of the effects of geological processes on Man and to encourage the responsible use of the Earth's resources.

An Interim Committee is currently being set up and the following have accepted invitations to join this Committee:-

M. J. Barefoot, A. C. Bishop, C.M. Bristow, V. S. Colter,  
 Annette Cutler, C. J. Dixon, J. Essex, A. H. Fawcett,  
 E. H. Francis, Jane French, D. A. Gray, L. V. Illing,  
 J. L. Knill, W. S. Pitcher, B. Scott, D. S. Seabrooke,  
 R. C. Selley, J. K. Shanklin, P. T. Warren, R. C. L. Wilson,  
 E. B. Wolfenden.

It is intended to invite applications for membership of the Association during the autumn of 1975. A series of regionally-based meetings will be held in the winter of 1974-75 and these will be followed by a meeting in London at which it is planned to formally elect an executive body. Further information should be available later this year and will be provided by Professor J. L. Knill (Department of Geology, Imperial College, London SW7 2BP) to those sending a stamped addressed envelope.

S. A. BALDWIN

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