

GEOLOGICAL CURATORS' GROUP

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

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

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The views expressed by authors in the Geological Curator are entirely their own and do not represent those of either the Geological Curators' Group or the Geological Society of London unless otherwise stated.

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COVER. The 'Thumbs Up' campaign logo superimposed upon the first leaflet in the campaign series Rocks, minerals and fossils - how to make the best of your collection. See article on p.189 .

THE GEOLOGICAL CURATOR

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GEOLOGICAL CURATORS' GROUP

October 1985

EDITORIAL

During a long forgotten discussion about progress with Guidelines, towards the end of a marathon meeting of GCG Committee, an idea was born which has since blossomed into the 'Thumbs-Up' campaign - officially launched with this issue of the Geological Curator. The initial thinking behind the campaign was set out by Tristram Besterman (Plymouth City Museum and Art Gallery) in his discussion document circulated for the 1984 AGM in December at the National Museum of Wales, Cardiff. He explains further what the campaign seeks to achieve on p.189, and we have also included an all purpose press release suitable for tailoring to local circumstances as necessary.

The 'Thumbs-Up' campaign seeks to encourage use by the public of those museums capable of providing an all round geological service and, through the use of the 'Thumbs-Up' dinosaur logo, will enable such museums to be readily identified. Robertson Research International Ltd have generously agreed to sponsor the first campaign leaflet 'Rocks, fossils and minerals', for which the Group is very grateful. Qualifying museums should order their 'Thumbs-Up' signs immediately and any museum or individual can obtain copies of the leaflet from the Editor (see p.190). Following an encouraging initial reaction it is hoped to feature the campaign on BBC TV in the not too distant future. Members comments, suggestions, ideas for further leaflets in the series etc. will be most welcome and can be passed on to the membership via the pages of the Geological Curator.

Guidelines is out! Read no further before winging off your order form (enclosed) to the Geological Society of London; copies with the purpose designed loose-leaf binder are strictly limited in number - so do it now!

This issue also sees the inauguration of a new series under the title 'Then and Now'. Alan Howell (Bolton Museum) explains the thinking behind the series and gets it off to a good start with the unique source of Upper

Carboniferous arthropods at Sparth Bottoms, Rochdale. 'Then and Now' is essentially a picture series, utilising the tried and tested appeal of photographs to contrast the original state of a historically significant site with its present condition. Many museums will have suitable period photographs in their site files capable of being matched with an up-to-date equivalent. Sparth Bottoms shows how great the contrast can be! I look forward to receiving further contributions for this series.

Following the extended editorial in Vol.4, No.3 about the state and status of geology within the Nature Conservancy Council, George Black responds in this issue with his own fears concerning the effects on geological conservation of the recent legislation and policy statements under which the NCC now operates. The possible ramifications of over zealous notification of PDOs (Potentially Damaging Operations) by the Council to the owners of geological SSSIs will be of particular concern to museum geologists.

Michael Crane's impending departure from Bristol Museum (see p.216) means another transfer of responsibility for the 'Lost and Found' column. Mike's term as compiler has been all too brief. We thank him for his joint work with Hugh Torrens over the last year and wish him well with his new responsibilities. Your Committee decided at its January meeting that the Recorder's remit should in future include joint responsibility (with Hugh Torrens) for 'Lost and Found'. Don Steward, our current Recorder, has kindly agreed to compile future columns.

Look out for another new series in the next issue, dealing with 'forgotten' pioneers of geological curation under the title 'Uncurated Curators' - another brainchild of Hugh Torrens. The first two contributions will deal with George Fleming Richardson, 1796-1848 (Gideon Mantell's curator) by Hugh Torrens and John Cooper, and Tom Sheppard (Curator of Hull City Museums) by Mick Stanley. Who's next?

Peter R. Crowther
Editor, Geological Curators' Group

15 September 1985

THE 'THUMBS UP' CAMPAIGN

BY TRISTRAM BESTERMAN

'Yes, but there are no votes in fossils,' cried my curatorial colleague, voice ringing with that quality of authority and confidence which only years of unfettered connoisseurship can bestow. The scene: the Annual Conference of the Museums Association. The time: the debate following Phil Doughty's and Geoff Hancock's papers on the plight of natural science collections in 1980.

The logic behind the utterance of my fellow delegate ran something like this. The art market - in which all our larger public museums play an important role - is one in which many millions of pounds change hands every year. Collections of fine art are therefore perceived to be worth a lot of money, so a lot of money is attracted for their maintenance and for more 'priceless' acquisitions. The big money brings power and prestige for the museum and its controlling authority - which all adds up to votes in the council chamber.

Ah yes, but where does this leave yer average punters and their votes in the polling station? Are they really more turned on by the knowledge that their local museum in the north of England is raising \$2.4 million to acquire an early Italian Renaissance painting than they are by the fact that the museum told an eager youngster all about those fossils found on holiday in Whitby?

No criticism whatever is implied of our arts-based colleagues: I am second to none in my admiration and appreciation of what they achieve. If anything, I am envious of their success in attracting the level of funding so desperately needed for museum activities outside the arts (and let it not be forgotten that our 'heritage minister' - with responsibility for all that goes on in museums - is called the Minister for the Arts). My concern is that the extraordinary disparity in spending by museums between the Arts and the Sciences is not a true reflection of public interest. From here it is only a short step to recognise the need to raise the public profile of geology in museums to the level enjoyed by the arts. It's all a matter of image, really - so why shouldn't we work on ours a bit?

And thus was the 'Thumbs-Up' campaign conceived. There is only one geological image that has an almost sure-fire universal appeal: the dinosaur. The only choice involved was - what kind? It had to be British, which reduced the options, and the anthropomorphic gesture of Iguanodon's 'thumb' bone suggested the rest.

Tristram Besterman
Plymouth Museums & Art Gallery
Drake Circus, Plymouth PL4 8AJ

Typescript received 7 August 1985

There are two tactical strands to the initial phase of the campaign (see Geological Curator 4 (2), Minutes of 11th AGM, Item 6 p.90 and Item 12 p.93). First there is a leaflet designed for the geological tyro. It is A4 size, folded twice so that it fits easily in the pocket. Called 'Rocks, Fossils and Minerals' the leaflet is subtitled 'How to make the best of your collection' and deals, cartoon-style, with elementary advice on the do's and don'ts of field collecting and recording; how to develop material at home; keeping a simple catalogue; and how to find out more. At every stage the role of the local museum as a source of information and advice is stressed. The back of the leaflet carries a list of museums which provide some level of geological service, on a two-tier rating system. Those on the first tier provide displays, reference collections, an identification service and employ a qualified geologist on the staff, plus, in some cases, a geological localities record centre. Museums in the second tier also provide these services but, crucially, do not employ a qualified geological curator.

This links directly with the second element of the campaign, namely the use of the 'Thumbs-Up' logo as a symbol of 'accreditation' by the GCG for a museum in the first tier described above. This has been produced as a sticker to be mounted on the glass entrance doors of all the first tier museums on the leaflet list. The leaflet reproduces this symbol and reminds the user 'to look for museums with the 'Thumbs-Up' sign for geological services.'

It is intended that these represent merely the opening shots in the campaign. I hope that colleagues will come forward with suggestions for future leaflets and other promotional material.

My particular thanks must go to Peter Crowther for the marvellous job he's done of tidying up and refining the leaflet, and for arranging printing of the leaflet and sticker; thanks also to Alan Birdsall of the Design Section of Leicestershire Museums Service for 'professionalising' the logo. Leicester are also to be credited with bringing the campaign to the attention of BBC's 'Blue Peter', who have, at the time of writing, expressed interest in featuring the launch in a future edition of the programme.

Meanwhile, let us hope that we can begin to get some public recognition for the fact that there are votes in fossils!

TEXT FOR PRESS RELEASE

We hope that all museum geologists will promote the aims of the 'Thumbs-Up' Campaign via their local media. What follows is merely suggested text and no doubt could be improved and tailored to local circumstances:

DINOSAUR DEBUT!

This is the dinosaur Iguanodon which browsed on the lush vegetation of what is now south-east England, about 130 million years ago. Its remains, along with many commoner fossils, minerals and rocks from all over Britain and abroad, continue to fascinate people of all ages. First there is the excitement of discovery. Then come all the questions - What is it? How old is it? How can I preserve it? How can I find more about it? Where can I find more? The answers to these questions - and many more besides - will be found inside your local museum. 'Will', that is, if it is sporting the 'Thumbs-Up' sign of geological service on its front door.

A list of museums eligible to display the 'Thumbs-Up' sign is printed on the accompanying leaflet 'Rocks, Fossils and Minerals - how to make the best of your collection' (available from these and other museums). A local family intending to holiday almost anywhere in Britain can plan a visit to the nearest listed museum to find out the best places to collect. They can then either return there to use the displays, publications or staff to identify their finds, or use another listed museum nearer home for this purpose after their holiday is over.

The leaflet also explains some of the 'dos and don'ts' of collecting, preparing, recording and caring for geological finds, as well as giving hints to the beginner on how to discover more about what he's found - all related to the friendly help and service given by the local museum.

The 'Thumbs-Up' image and a planned series of publications are designed to increase public awareness of the resources deployed in our network of museums, specifically to foster the establishment and growing general interest in the story of Britain's rocks. For many people it's a story that puzzles as much as it fascinates - and this is where the local museum comes in, to unravel the puzzle and to fuel the enthusiasm!

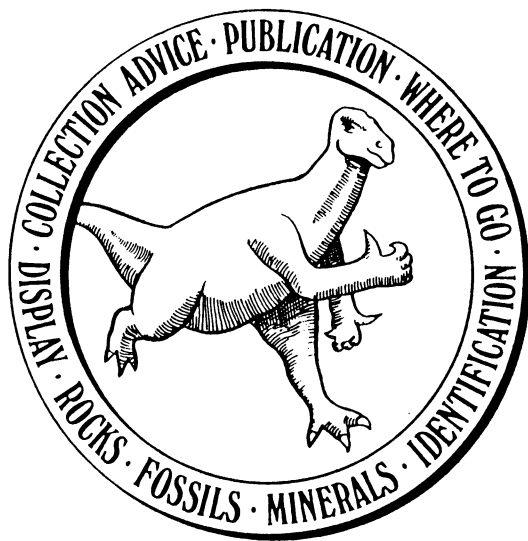
Please contact your friendly local geological curator to find out more about the services offered:

The 'Thumbs-Up' promotion for geological services in museums is a continuing campaign, launched in October 1985. Your support will be gratefully appreciated.

Tristram Besterman and Peter Crowther
Thumbs-Up Campaign Co-ordinators
c/o Leicestershire Museums Service
96 New Walk, Leicester LE1 6TD

ROCKS FOSSILS and MINERALS

How to make the best of your collection.



A Thumbs-up guide for
the young enthusiast.

Published by the U.K. Geological Curators' Group.

Front of 'Thumbs-Up' campaign leaflet 'Rocks, fossils and minerals'.

HOW TO JOIN IN THE CAMPAIGN

Leaflets. All museums are welcome to distribute leaflets. Thanks to the generosity of Robertson Research International Ltd, we can supply up to 200 leaflets per museum for postage costs only. Reprinting is expected.

Window sticker. These colourful 250x180mm stickers are printed on self adhesive vinyl and are ideal for fixing to, for example, the glass entrance doors of a museum. Only museums which employ a qualified geological curator are entitled to display the sticker (marked with an * on campaign leaflets). Stickers cost £1 each - multiple orders are welcome!

Send or telephone your orders for leaflets and stickers to Peter Crowther (address left) as soon as possible.

When you lose

SCOTLAND

- * Dundee Museum & Art Gallery, Albert Square, Dundee DD1 1DA. (Tel: 0382 27643).
- * Glasgow Art Gallery & Museum, Kelvingrove, Glasgow G3 8AG. (Tel: 041-334 1134).
- * Hunterian Museum, University of Glasgow, Glasgow G12 8QQ. (Tel: 041-339 8855 ext. 221).
- * Montrose Museum & Art Gallery, Panmure Place, Montrose, Angus DD10 8HE. (Tel: 0674 73232).
- * Perth Museum & Art Gallery, George Street, Perth. (Tel: 031-225 7534).
- * Royal Scottish Museum, Chambers Street, Edinburgh EH1 1JF. (Tel: 031-225 7534).

WALES

- * Brecknock Museum, Captains Walk, Brecon, Powys LD3 7DW. (Tel: 0874 4121).
- * National Museum of Wales, Cathays Park, Cardiff CF1 3NP. (Tel: 0222 397951).

NORTHERN IRELAND

- * Ulster Museum, Botanic Gardens, Belfast BT9 5AB. (Tel: 0232 668251-5).

NORTH AND NORTH-WEST ENGLAND

- * Bolton Museum & Art Gallery, Le Mans Crescent, Bolton, Lancs. BL1 1SA. (Tel: 0204 22311 ext. 379).
- * Cleveland Gallery, Victoria Road, Middlesbrough TS1 3QS. (Tel: 0642 248155 ext. 3375).
- * Hancock Museum, Barras Bridge, Newcastle-upon-Tyne NE2 4PT. (Tel: 0632 322359).
- * Kendal Museum, Station Road, Kendal, Cumbria LA9 6BT. (Tel: 0539 21374).
- * Lancashire Museum Service: Clitheroe Castle Museum, Castle Hill, Clitheroe. (Tel: 0200 24635).
- * Manchester Museum, University of Manchester, Oxford Road, Manchester M13 9PL. (Tel: 061-273 3333).
- * Merseyside County Museums, William Brown Street, Liverpool L3 8EN. (Tel: 051-207 0001/5451).

- * Sunderland Museum & Art Gallery, Borough Road, Sunderland, Tyne and Wear SR1 1PP. (Tel: 0783 41235).

YORKSHIRE AND HUMBERSIDE

- * Cliffe Castle Museum, Spring Gardens Lane, Keighley BD20 6LH. (Tel: 0535 64184).
- * Doncaster Museum & Art Gallery, Chequer Road, Doncaster DN1 2AE. (Tel: 0302 734287).
- * Kingston-upon-Hull City Museums & Art Galleries, Town Docks Museum, Queen Victoria Square, Kingston-upon-Hull HU1 3DX. (Tel: 0482 222737).
- * Leeds City Museum, Calverley Street, Leeds LS1 3AA. (Tel: 0532 462632).
- * Scunthorpe Borough Museum & Art Gallery, Oswald Road, Scunthorpe, S. Humberside DN15 7BD. (Tel: 0724 843533).
- * Sheffield City Museum, Weston Park, Sheffield S10 2TP. (Tel: 0724 27226).
- * Yorkshire Museum, Museum Gardens, York YO1 2DR. (Tel: 0904 29745).

MIDLANDS

- * Birmingham Museum & Art Gallery, Chamberlain Square, Birmingham B3 3DH. (Tel: 021-235 2834).
- * Derby Museums & Art Gallery, The Strand, Derby DE1 1BS. (Tel: 0332 31111 ext. 782).
- * Derbyshire Museum Service: Buxton Museum & Art Gallery, Terrace Road, Buxton, Derbys SK17 6DU. (Tel: 0298 4658).
- * Hereford City Museum & Art Gallery, Broad Street, Hereford HR4 9AU. (Tel: 0432 268121 ext. 207/334).
- * Leicestershire Museum Service: Leicestershire Museum & Art Gallery, New Walk, Leicester LE1 6TD. (Tel: 0533 554100).
- * Melton Carnegie Museum, Thorpe End, Melton Mowbray. (Tel: 0664 69946).
- * Rutland County Museum, Catmos Street, Oakham, Rutland. (Tel: 0572 3654).
- * Nottingham Natural History Museum, Wollaton Hall, Wollaton Park, Nottingham NG8 2AE. (Tel: 0602 281333/281130).

- * Shropshire Museum Service, Ludlow (Buttercross) Museum, Old Street, Ludlow. (Tel: 0584 3857).
- * Stoke-on-Trent City Museum & Art Gallery, Hanley, Stoke-on-Trent ST1 3DW. (Tel: 0782 273173).
- * Warwickshire Museum, Market Place, Warwick CV34 3SA. (Tel: 0926 493431 ext. 2500).
- * Worcester City Museum & Art Gallery, Foregate Street, Worcester WR1 1DT. (Tel: 0905 25371).

EAST-CENTRAL AND SOUTH-EAST ENGLAND

- * British Museum (Natural History), Cromwell Road, London SW7 5BD. (Tel: 01-589 6323).
- * Brighton: Booth Museum of Natural History, 194 Dyke Road, Brighton BN1 5AA. (Tel: 0273 552586/603005 ext. 64).
- * Buckinghamshire Museum, Church Street, Aylesbury, Bucks. HP20 2QP. (Tel: 0296 82158/88849).
- * Cambridge: Sedgwick Museum of Geology, Downing Street, Cambridge CB2 3EQ. (Tel: 0223 355463).
- * Geological Museum, Exhibition Road, South Kensington, London SW7 2DE. (Tel: 01-589 3444).
- * Hampshire Museum Service: Curtis Museum, High Street, Alton, Hants. GU34 1BA. (Tel: 0420 82802).
- * Horniman Museum Library, London Road, Forest Hill, London SE23 3PQ. (Tel: 01-699 1872/2339/4911).
- * Ipswich Museum, High Street, Ipswich IP1 3QH. (Tel: 0473 213761).
- * Letchworth Museum & Art Gallery, Broadway, Letchworth SG6 3PF. (Tel: 04626 5647).
- * Museum of Isle of Wight Geology, High Street, Sandown, Isle of Wight. (Tel: 098-384 4344).
- * Norfolk Museum Service: Castle Museum, Norwich, Norfolk NR1 3JU. (Tel: 0603 611277 ext. 279).
- * Cromer Museum, East Cottages, Tucker Street, Cromer, Norfolk. (Tel: 0263 513543).
- * Lynn Museum, Market Street, Kings Lynn, Norfolk. (Tel: 0553 5001).

- * Oxford University Museum, Parks Road, Oxford OX1 3PW. (Tel: 0865 57529).
- * Passmore Edwards Museum, Romford Road, Stratford, London E15 4LZ. (Tel: 01-519 4296 or 01-534 4545 ext. 5670).
- * Peterborough City Museum & Art Gallery, Museum Road, Old Portsmouth, Hants. PO1 2LJ. (Tel: 0705 827261).
- * Reading Museum & Art Gallery, Blagrove Street, Reading RG1 1QH. (Tel: 0734 55911 ext. 2242).
- * St. Albans City Museum, Hatfield Road, St. Albans, Hertfordshire AL1 3RR. (Tel: 0727 56679).

WEST-CENTRAL AND SOUTH-WEST ENGLAND

- * Bath Geology Museum, 18 Queen Square, Bath, BA1 2HP. (Tel: 0225 28144).
- * Bristol City Museum & Art Gallery, Queens Road, Bristol BS8 1RL. (Tel: 0272 299771).
- * Camborne School of Mines Geological Museum, Trevenson, Pool, Redruth, Cornwall TR15 3SE. (Tel: 0209 714866).
- * Dorset County Museum, High West Street, Dorchester, Dorset DT1 1XA. (Tel: 0305 62735).
- * Exeter: Royal Albert Memorial Museum, Queen Street, Exeter, Devon EX4 3RX. (Tel: 0392 56724).
- * Lyme Regis (Philpot) Museum, Bridge Street, Lyme Regis, Dorset DT7 3QA. (Tel: 02974 3370).
- * Plymouth City Museum & Art Gallery, Drake Circus, Plymouth PL4 8AJ. (Tel: 0752 668000 ext. 4378).
- * Torquay Museum, 529 Babacombe Road, Torquay, Devon TQ1 1HG. (Tel: 0803 23975).
- * Truro: Royal Institution of Cornwall, County Museum, River Street, Truro, Cornwall. (Tel: 0872 2205).
- * Somerset County Museum, Taunton Castle, Castle Green, Taunton, Somerset TA1 4AA. (Tel: 0752 55504).
- * Woodspring Museum & Art Gallery, Burlington Street, Weston-Super-Mare, Avon BS23 1PR. (Tel: 0934 21028).

Detailed & advanced study available at the book Lanning SW7 2DE. There are many well-illustrated general handbooks in the series 'British Fossils' to help you identify your specimens.

in your days.
CAL OPM
Remember museum
of geological

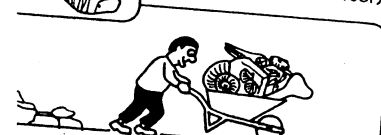
g o l
first step in specimen is to the where
published by the Geologists' Association, 10, Gower Street, London WC4E 6BT.
(Each with an excellent introduction to the Geologists' Association and its publications.)

In doubt at your local museum or from the Geologists' Association, Burlington House, Piccadilly, London W1V 0DU.

Further reading: 'A Code for Geological Fieldwork' available from the Geologists' Association.

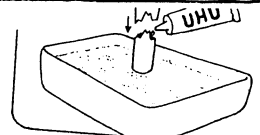


Wrap your specimens in kitchen roll or toilet tissue (not cotton wool).



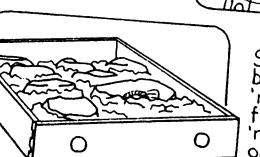
LOCAL MUSEUM

A Code for Geological Fieldwork' available from the Geologists' Association.



Make a catalogue in a hard-backed exercise book. Give each specimen a number and write it on the specimen.

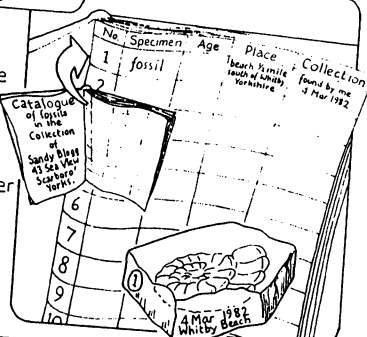
Against this number in the catalogue write what you know about the specimen. Correct identification etc. can be added later.



Store your collection safely by making a tissue paper 'nest' for each specimen, fitting snugly with other 'nests' in wooden drawers or boxes with lids.

LOCAL MUSEUM

pack on using 'UHU' or Lepage's polystyrene and balsa cements. Never use 'Super glue' or 'Araldite' or any other epoxy resin.



There are many well-illustrated general handbooks in the series 'British Fossils' to help you to identify your specimens.

A Field Guide in Colour to Minerals, Rocks and Precious Stones by J. Bauer, Octopus Books, 1974.

Fossil Collecting by F.G. Dimes and R. Melville, E.P. Publishing, 1979.

British Palaeozoic Fossils, British Museum (Nat. Hist.), 1979.

British Mesozoic Fossils, British Museum (Nat. Hist.), 1979.

British Cenozoic Fossils, British Museum (Nat. Hist.), 1979.

In the Geological Museum in London 'British Fossils' is designed to help you identify your specimens. Your local museum too.

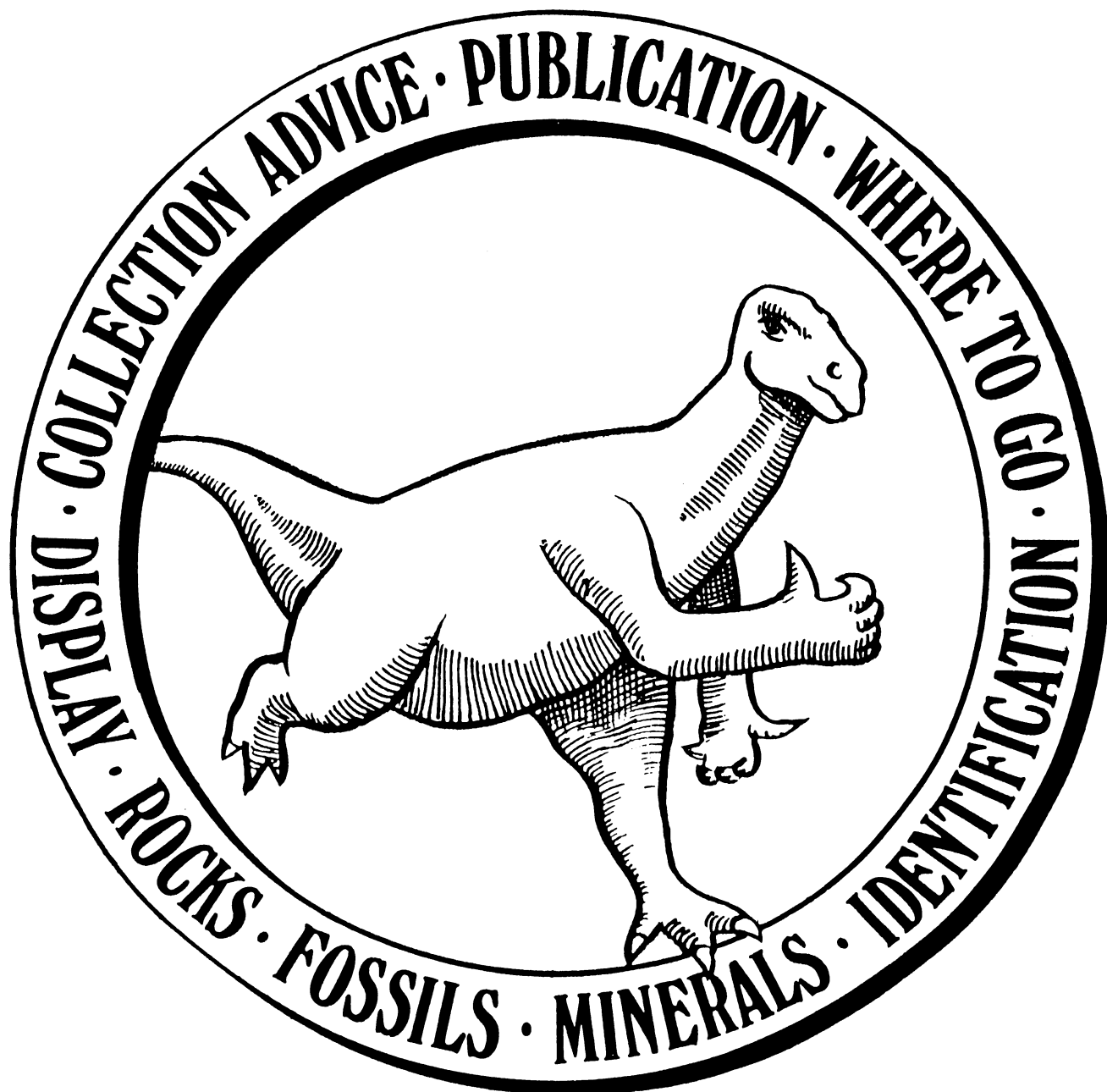
Get **HELP!** from

- to find where to go to collect specimens?
- to get equipment?
- to find books and maps?
- to identify your specimens?
- to find out more about geology?

Then visit your... **LOCAL MUSEUM**

Thumbs-Up' campaign leaflet 'Rocks, fossils and minerals'. Thumbs-Up' sign are distinguished by an *.

Museums qualified to display the



The "THUMBS UP" sign
of
GEOLOGICAL SERVICE
in this museum

Approved by the U.K. Geological Curators Group

'Thumbs-Up' campaign window/glass-door sticker, actual size. The stickers are printed in black, white, green and brown and cost £1 each to qualifying museums.

QUARRYING AND FOSSIL COLLECTING IN THE POSIDONIENSCHIEFER (UPPER LIASSIC) AROUND HOLZMADEN, GERMANY

BY THOMAS KELLER

HISTORICAL BACKGROUND

The shales of the Posidonienschiefer have been quarried for many centuries in a small district which includes the villages of Holzmaden, Ohmden, Zell, and Boll, at the foot of the Swabian Alb in south-west Germany (Federal Republic Land of Baden-Württemberg) (Fig.1). The Posidonienschiefer is a dark, bituminous Upper Liassic shale which alternates with marls and thin limestone layers. In 1843 the Tübingen geologist F.A. Quenstedt classified the Lower Jurassic of south Germany on a mainly lithological basis, using the Greek letters α (alpha) to ζ (zeta) to denote the subdivisions (Urlichs 1977, p.2). The Posidonienschiefer has since also been known as the Lias Epsilon. Shortly afterwards Oppel erected a similar scheme based on ammonite zonation.

By the early nineteenth century the Posidonienschiefer was already well known as a remarkably rich source of fossils. Indeed, the first descriptions of fossils go back to Bauhin (1599) on ammonites and Hiemer (1724) on crinoids; the oldest surviving Swabian ichthyosaur was found near Boll in 1749 (Scheuchzer 1708 had been the first to describe a south German ichthyosaur). For the third edition of Recherches sur les ossements fossiles, Georges Cuvier (1825) could already draw upon a wide range of Holzmaden fossils.

The industrial exploitation of the Swabian oil shale has had a varied history. Bauhin (1599) spoke of the black-roofed villages of the area, yet for the last two hundred years the rock has been quarried mainly as a stone for interior architecture. Since about the middle of the nineteenth century many attempts have also been made to extract oil and gas, as well as to manufacture cement from the rock; this industry led to the opening up of other, more distant localities in the foothills of the Swabian Alb, e.g. Dotternhausen, Reutlingen, and Frommern in South Württemberg. These attempts, however, were generally not very profitable and I shall not consider them further in this paper.

QUARRYING

The quarrying is concerned mainly with the 'Fleins', a single bed within the Posidonienschiefer, near the base of the Middle Epsilon. The Fleins at Holzmaden is almost 18cm thick, and is recognizable by its characteristic undisturbed fine stratification, and by the regularity and persistence of jointing (both primary and secondary). The secondary joints cross at about right angles or obliquely so, when quarried, the rock breaks into more or less rectangular slabs - a great advantage. The Fleins can be split again by the quarryman into several thinner slabs and further processed. The technical characteristics of

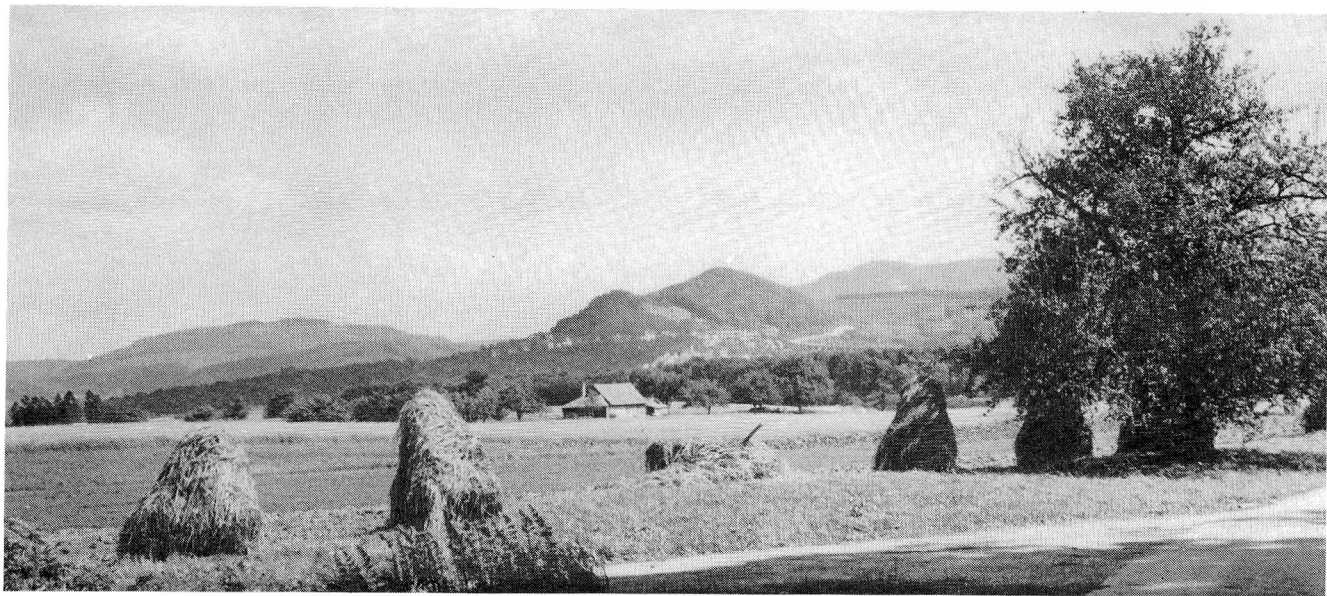


Fig.1. The Swabian Alb in the Holzmaden area. The shale quarries lie in the higher ground of this district. In the background the Alb is formed of marls and limestone of the Middle and Upper Jurassic.

the Fleins are unsurpassed by other layers in the Posidonienschiefer. The Fleins is so valuable that in each quarry the extraction of each slab is recorded on a plan.

The overburden above the Fleins has to be stripped off and transported to the quarry dump. Usually the soil, a thin layer of the Jurensismergel (Lias Zeta), and all the Upper and most of the Middle Epsilon have to be removed. The depth depends on the degree of erosion found at each locality but, in unfavourable cases, there may be up to 6m of overburden. After the Fleins is removed, the underlying shale strata ('Hainzen' and 'Koblenzer') act as a working floor for the quarry. Below these lie the beds of the Lower Epsilon, which is thinner and mainly marly; it does include a bed of high quality stone, the 'Tafelfleins', which is less well jointed than the Fleins and was previously commonly exploited. It is now little used. From the waste material certain limestone beds are sometimes used as building stone and thin shale slabs for roadstone. Near Boll a small enterprise is still operating, selling powdered shale to the pharmaceutical industry.

In some Holzmaden quarries, right up to the 1960s, it was still possible to see the extraction methods of the nineteenth century in use. The stone was almost wholly won out by sheer muscular effort, using the 'Reuthaue' (a stone mattock, Fig.2) and shovel. Today machines are used (especially excavators and bulldozers) for both removing



Fig.2. Quarrying the shale by hand with the Reuthaue (slate mattock) after loosening by blasting. Quarry of J. Fischer, Ohmden, 1968.

overburden (Fig.3) and extracting the Fleins (Fig.4). As I discuss later, however, the use of machinery is restricted by law. The thin, slabby shale of the Upper Epsilon, in which thicker limestone beds do not occur, is excavated by digging vertically to the bedding - as with the Oxford Clay near Peterborough - so that the vertical face is pushed back. This makes it impossible to recognize and extract larger fossils. Controlled blasting is less haphazard and is used to loosen the compact, thick layered shale beds (Fig.5); it generally leaves



Fig.3. The Upper and Middle Epsilon in the quarry of J. Fischer, Zell, 1976. The excavator is removing this overburden.

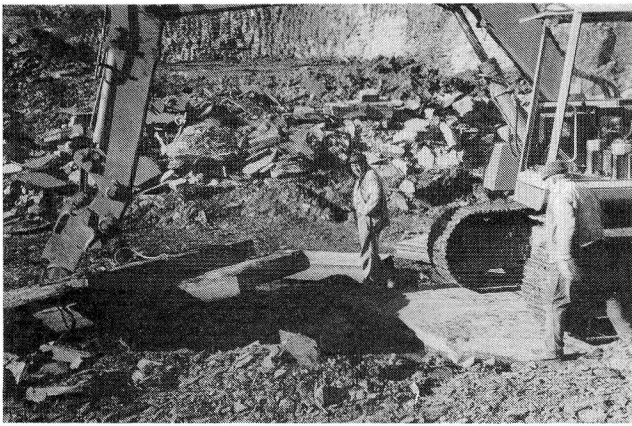


Fig.4. Extracting the valuable slabs of the Fleins with a crane on an excavator. Quarry of J. Fischer, Zell, 1977.



Fig.5. Boring a blasting hole in the Unteren Schiefer, just above the Fleins, in the quarry of J. Fischer, Ohmden, 1968. Blasting loosens the rock before extraction.

fossils unharmed (Fig.6), except when blasting holes pass near or directly through them. The thick layered, tough, partly calcified shale, and the limestone layers of the Middle Epsilon, cannot and should not be excavated by machinery, which is used only to loosen the rock formation.

With this change in quarrying methods has come a change in quarry shape. Previously, excavations of 5m by 8m were usual, and were created by 'mobile quarrying', where the waste material was removed to infill the rear of the quarry as the working face was pushed forward. The quarry thus remained the same size but moved slowly along. In 1920 there were about thirty of these small quarries in the region of Holzmaden, Ohmden, and Zell (Hauff 1921). Today only a few but much larger quarries remain; for example, one near Zell is 250m long by 60m wide, within



Fig.6. Large ammonites, *Lytoceras cornucopia* Young and Bird, 1822, in the Unterer Schiefer. Quarry of J. Fischer, Ohmden, 1968.

which different levels are excavated in different parts of the quarry, so creating several terraces about 50m long and 5m wide. Reclamation by infilling with overburden is still practised.

The quarrying industry has also undergone changes in its commercial practices and been rationalized. A few decades ago it was still normal for the owners of arable land to carry on their own quarrying where shale of good quality occurred at a moderate depth. Today, however, there is intense competition between the few remaining Holzmaden quarrying firms. Moreover, the demand for and use of Posidonienschiefer stone has been much reduced with the import of cheaper marble from abroad and the use of synthetic stone. Many traditional commercial stone industries in Germany have suffered a similar fate, including the lithographic limestone of Solnhofen.

FOSSIL COLLECTING

Large fossils (Figs.8, 9) are often recognized in the quarry, either when the rock layers bulge upwards over the fossil or when breakage of the rock renders it visible on the transverse fracture. The matrix of marl, bituminous marly shale, or limestone, and the condition of preservation in each type determine whether it is worth excavating and preparing the fossil.



Fig.7. A large group of crinoids, *Seirocrinus subangularis* (Miller, 1821) on a driftwood tree trunk. This group, measuring 18 x 6m, comes from the Fleins. Museum Hauff, Holzmaden.

The recovery of an ichthyosaur presents no problem to experienced workmen. Recent experience, however, shows that fewer fossils have been spotted in time for recovery since the introduction of machinery - even when quarrying is still done partly by hand - because of the greater speed of work. An example of this happened a few years ago when a large and well-preserved plesiosaur was not noticed until all the component slabs were on the rubbish heap; one of two small pleurosaurs specimens found in the 1970s was also found in the waste material.

Quarrying the shale using nineteenth century methods would soon become unprofitable for a modern firm, although it would be ideal for palaeontologists. The law, however, restricts the use of machinery in fossiliferous areas and is effective when it is observed by the quarrying firm and when trained workers are employed continually to supervise the work. The Staatliches Museum für Naturkunde at Stuttgart (State Museum for Natural History) understandably lacks both personnel and funds to supervise continually the present day firms, of which there are at least four. On the other hand, the occurrence of fossils is itself an additional incentive for these firms. Examples not protected by law can be sold for additional income; large ammonites are in demand for use as insertions in wall facings of shale.

Some Holzmaden firms maintain their own preparation workshops which produce quality work of high value. Preparation techniques for Holzmaden material have been described by Lörcher and Keller (1985).

PROTECTIVE MEASURES

In the case of rare fossils worthy of protection, those from the Posidonienschiefer fall under the Law for the Protection of Cultural Monuments ('Gesetz zum Schutz der Kulturdenkmale', also known in short as the 'Denkmalschutzgesetz'), enacted in 1971. Fossils worthy of protection thus have the status of 'moveable ground monuments' ('bewegliche Bodendenkmale'). Wild (1983) gives more details. The importance, and therefore need for protection, of a fossil is not at all easy to determine precisely for large, unprepared specimens like ichthyosaurs. Ichthyosaurs (Figs.9, 10) are statistically relatively common fossils but are scarcer in some strata than others. Certain genera and species are rare and represented to date by only a few specimens, while specimens of even the commonest species can become outstanding by virtue of special biological features such as the presence of embryos or young being born, preservation of soft parts such as fins, or unusual positions of burial.

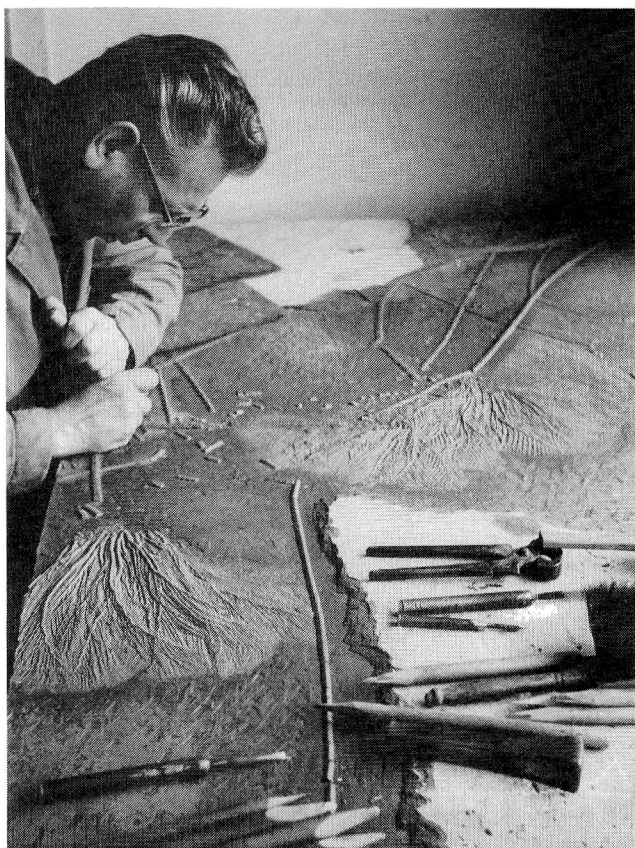
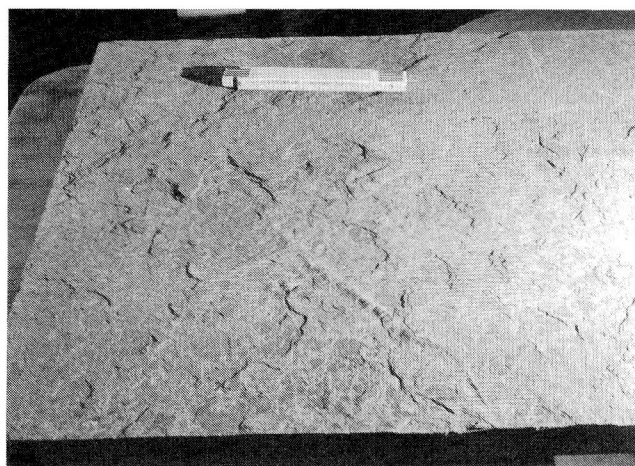


Fig.8. Head Preparator O. Fischer(1920-1983) at work freeing the crinoids Seirocrinus subangularis (Miller, 1821) in Fig.7 from the matrix. Workshop of B. Hauff, Holzmaden, 1968.

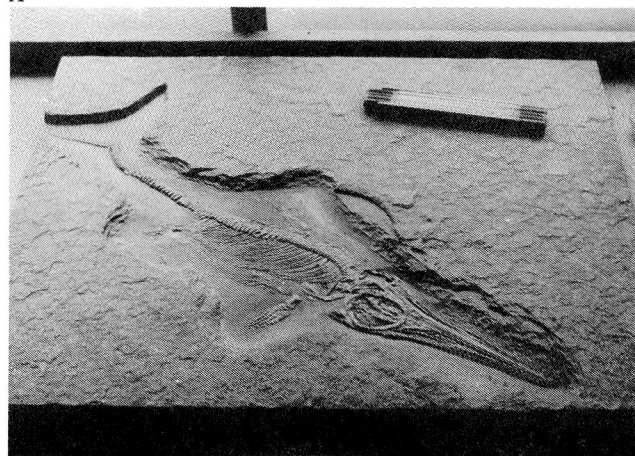
The finder of protected fossils is legally obliged to report his find to an official such as a member of staff at the Staatliches Museum für Naturkunde in Stuttgart, which is responsible for Württemberg. The area around Holzmaden has been designated a 'protected excavation area' ('Grabungsschutzgebiet') by a 1979 regulation of the District Council of Stuttgart based on the Law for the Protection of Cultural Monuments. Within this area the machine-quarrying of shale is restricted, and any house, street, and road construction which encroaches upon the shale must first be approved by the Monument Office of the Land (Landesdenkmalamt) (Wild 1983). Recovery of fossils within the protected excavation area is usually carried out under the supervision of qualified personnel and firms. This is necessary because each find involves a considerable expenditure of money, and to minimise any interruption of the quarrying work. This requires close contact between the quarrying firm and the Museum (as representative of the Monument Office of the Land).

The ownership of the recovered, protected fossils devolves upon the Land of Baden-Württemberg. However, the Land pays a reward for finding each specimen, as well as compensation for the work of recovery and preparation.

Undoubtedly there is a proportion of undetected crime in the Holzmaden area,



A



B

Fig.9. A, an unprepared ichthyosaur, a small Stenopterygius 77cm long, in an already trimmed slab from the Fleins; the tip of the snout and the vertebral column are visible as slight bulges diagonally to the slab borders. B, the same ichthyosaur after preparation; the specimen has been exposed from the underside of the slab and shows preserved soft parts. Workshop of J. Fischer, Holzmaden, 1970/1971.

whether through larceny by finding and keeping, or by outright theft of fossils. However, the close cooperation between Land officials, the Museum, and the quarrying firms is evident from the great number of excellent and rare fossils which have been recovered, prepared, and made public by their joint efforts over the last decades.

ACKNOWLEDGEMENTS

I am very grateful to Mr A.C. Benton for translating this paper, and to Dr M.J. Benton for help with specialist terms.

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29 August 1984.

Wild, R. 1983. Fossilien als Kulturdenkmale. Museumsmagazin aus Museen und Sammlungen in Baden-Württemberg, 1, 7-13. [A translation of this article will appear in Geol. Curator 4(5) under the title 'The protection of fossils as 'cultural monuments' in the Federal Republic of Germany'.]

LETTERS TO THE EDITOR

Dear Editor,

With respect to the 'labyrinthodont' amphibian which formed the subject of Doré and Wändas' recent paper (1985. Geol. Curator 4, 169-171), I can add that the specimen was included in a paper by Dr Alec Panchen in 1959 (Phil. Trans. Roy. Soc. 242, 207-291). He published a photograph of the head of the Bear Island fossil (Fig.19), and concluded that it belonged to the genus Plagiosternum. A reconstruction of the skull of Plagiosternum based upon that of the Bear Island specimen was also included (Fig.16e-f). A photograph of the complete specimen resides on the wall in my office. Sample fragments, according to Panchen's paper, were collected in 1948 and are now in Norway. We have none here in the Museum of Zoology, but we do have a little material of P. granulosum from the type site in Creilsheim. We also have the material of Peltobatrachus described by Panchen.

Yours sincerely,

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Dear Editor,

I concur with Patrick Boylan (Geological Curator, 4(2), 103) that it was good to see Paul Edwards' paper on the geological collections of Kingston upon Hull Museums in Vol.4, No.1. However, as the 'past Senior

Keeper' who researched the lost collections, I offer a correction.

Christine Edwards (née Castle) did indeed commence the comprehensive cataloguing of the geological collections in 1979 but supervised by Michael Boyd under my direction. In fact, the whole of the Natural Science collections were then being catalogued. I had introduced MDA to Hull Museums in order to catalogue the entire collections, mainly using STEP personnel.

At the same time I began a thorough search of committee minutes, Hull Museum Publications and printed catalogues of both the public museum (1898 - present) and its predecessor The Hull Literary and Philosophical Society Museum (1822-1898) to try to locate the lost collections. This exercise proved immensely rewarding as witnessed by Edwards' article, but my notes appear to be more complete than those presently held by the Natural History Department. The full information is really too long to reproduce here but it is my intention to include it when I curate that famous 'uncurated' curator Tom Sheppard of Hull Museums (1901-1941) in these pages early next year

Yours sincerely,

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A COMPUTER-GENERATED LIST OF COLLECTORS, DONORS AND VENDORS OF SPECIMENS IN THE SEDGWICK MUSEUM

BY DAVID PRICE

The manual system of specimen documentation which existed in the Sedgwick Museum until August 1983 never included any sort of index of collectors or donors. This list is therefore the first of its kind for the Sedgwick Museum. It has been generated using the information retrieval (IR) facilities of the museum's sophisticated computer-based cataloguing system. These facilities have been described by Porter (1983) and the computer-based system as a whole has been reviewed by the present author (Price 1984, 1985).

Each record in the museum's machine readable catalogue is broken down into a large number of tagged data-fields arranged in a complex hierarchical structure. Only the terminal data-fields of this structure (the basic data-fields as distinct from the group fields nearer the origin) contain actual data and are either keyword fields containing essential data, or detail fields containing data elaborating the keywords. Within the computer-based system the keywords in selected keyword fields are used to automatically generate terms in an index (the IR term-index) upon which information retrieval is based.

Most records in the machine-readable catalogue include a data-field (*pers) within the collection statement field (*cs) containing the name of a collector or, failing that, a comparable field (*pers) within the ownership history field (*oh) containing the name of a donor or vendor. Some records have both. (In all cases the names may be those of organisations or institutions rather than individuals). These *pers fields in the *cs or *oh fields of each record automatically generate 'donor' terms in the IR term-index. Such terms are prefaced by the upper case letter 'D' (to show that they are 'donor' terms) and each comprises a string of up to twenty-three lower case letters with commas or stops but without spaces. Records of specimens collected or presented by O.T. Jones thus generate the donor term 'Djones,o.t.'

To produce the list below the system was asked to generate a list of all donor terms within its current term-index, using the similar-term facility described by Price (1985, p.50). This list was then carefully edited to restore donor names to normal orthography and to eliminate any variants of a particular name (e.g. Cowper Reed, F.R. for Reed, F.R.C. or McKenny Hughes, T. for Hughes, T. McKenny). No attempt has been made to give correct titles or status to

individuals: such a title or status is only given (to aid identification) where it exists in the original catalogue. To aid identification of donors with only one initial, however, their christian names have been inserted where they are known with certainty. Donor names with two or more initials are regarded as inherently less ambiguous, though where christian names are given in the original catalogue they have not been removed.

Against each name in the list is the number of catalogued specimens attributable to the person, organisation, or institution concerned. This number is arrived at on the assumption that one Sedgwick Museum number is equivalent to one specimen (the current convention); for early catalogued small fossils such as foraminifera and for some Quaternary molluscs, which were numbered in batches, it will be a considerable underestimate. There are too some early collectors, donors, and vendors whose material was placed in the collections without any distinguishing note or label; most of this material cannot now be recognized. Prominent among these are the Reverend Thomas Image and Adam Sedgwick himself. The numbers of specimens attributed in the list to collectors such as these are only a minute fraction of the material for which they were actually responsible.

The Sedgwick Museum's current machine-catalogue relates to 450,942 specimen numbers and, as may be seen from the list, contains the names of 1,809 separate collectors, donors or vendors. There are fifty-seven named collectors of over 1,000 specimens. The twelve largest collections are each of over 5,000 specimens:

R.M. Brydone	37,679
B.W. Sparks	12,390
William Walton	10,987
C.J.A. and C.H. Meyer	9,661
W.H. Huddleston	9,644
Montagu-Smith	8,342
T.W. Wiltshire	7,925
John Leckenby	7,282
Osmond Fisher	5,889
T.W. Fletcher	5,820
G.F. Whidbourne	5,651
J.F. Walker	5,134

The list will change both as the catalogue is updated and as collection research at the Sedgwick Museum continues. More up-to-date information or more detailed information on particular collections may be obtained on application to the author. It may also be

possible to allow certain enquirers with a link to the Cambridge computer to obtain information by using the museum's IR facilities for themselves; enquiries should again be directed to the author.

Finally it must be stressed that the list only relates to material in the current version of the machine-readable catalogue. There is, of course, material in the museum not yet on computer file. Some of the more important of such collections are listed as a small appendix.

Ackland, L.	1	Barclay, M.E.	1	Bolton, M.	1
Adams, L.	1	Barker, J.M.	21	Bomford, G.	5
Adie, W.S.	1	Barker, Jessie	1	Bond, F.	1
Ager, D.V.	2	Barker, R.W.	306	Bonney, T.G.	623
Agrell, S.O.	75	Barker, T.W.	1	Booker, F.W.	13
Ahrens, H.W.	8	Barrande, J.	1574	Boreham, W.	1
Aitken, J.	669	Barrass, R.	2	Borrett, J.	2
Aitken, W.G.	27	Barrett, I.M.	3	Boswell, P.G.H.	129
Alder, K.	127	Barrett, Lucas	76	Boswell	1
Aldridge, R.	1	Barron, C.N.	2	Bosworth, T.O.	1844
Alexander, F.E.S.	664	Barron, R.S.	1	Boucek, B.	143
Alexander, G.B.	528	Barry	1	Bowen, E.J.	3
Alexander, R.G. (Jnr.)	1140	Bartlefrere, K.C.B.	4	Bower, T.H.	42
Alford (Miss)	1	Bassler, R.S.	4	Bowerbank, J.S.	4
Allan, R.S.	4	Bataafsche Petroleum		Bower, E. (Rev.)	6
Allen (Dr.)	3	Maatschappij	9	Bowman (Mr.)	1
Allen, E.F.	5	Bate, P.A.	13	Bowman, J.E.	1
Allen, P.	75	Bates, Mrs (Norwich)	8	Boyd, J.D.	21
Allhusen, F.E.	1	Bateson, W.	474	Bradley, P.C.Sylvester	59
Allison, A.	1	Beales, F.W.	16	Brady, Antonio (Sir)	13
Allison, J.	1	Bean, R.S.	3	Brady, H.B.	2
Ambrose, J.	25	Bean, William	391	Braidwood Collection	2
Amherst, M.	1	Beard, C.N.	75	Brailsford, B.	3
Amherst College	218	Beasley, H.C.	3	Brand, R.	13
Anderson, J.F.S.	15	Beauchamp, J.	2	Brand, W.A.	5
Andrews, J.B.	22	Beavis, F.	1	Brandon, A.de B.	1
Andrews, W.R. (Rev.)	4	Becker, R.B.	37	Branfield, J.	1
Anglo Egyptian Oilfields	43	Beckles, S.H.	1	Braun, F.	36
Anglo Iranian Oil Co.	76	Beechey, St.Vincent	1	Brend, W.A.	7
Anglo Saxon Petroleum Co.	34	Begg, J.L.	43	Bridgeman, M.R.	4
Anstice, J.B.	1	Bell, A.	13	Briggs, D.E.G.	49
Anton Ramova (Prof.)	1	Bell, A.M.	1	Brighton, A.G.	1038
Anton-Smith, J.	1	Bell, F.G.	1	British Association	
Antrobus, E.S.A.	2	Bell, J.A.H.	1	(E.S. Cobbold Colln.)	43
Arabian American Oil Co.	1948	Bell, W.	1	British Museum	
Arber, E.A.N.	277	Bendall, C.	1	(Natural History)	838
Arber, Muriel	71	Benn, C.A.	1	British Petroleum	51
Archer, J.B.	23	Benoist, E.	33	British Somaliland	
Archer, W.E.	1	Benson, C.W.	1	Petroleum Co.	154
Arkell, W.J.	1050	Benson, P.de G.	4	Brodby (Captn.)	8
Ash, F.A.	1	Benson, W.N. (Prof.)	2	Brodie, D.	1
Ashton, P.S.	1	Berry, E.W.	3	Brodie, P.B. (Rev.)	76
Atherton, D.L.	1	Berry, W.B.N.	110	Brodie, W.R.	8
Atherton, R.F.	11	Berthelsen, O.	107	Brogger, W.C.	4
Auden, J.B.	4	Betty, F.M.K.	2	Bronaugh, C.B.	339
Aukland, M.H.T.	4	Bevan, R.F.	2	Brooke, H.W.	9
		Beveridge	1	Brookes, P. (Cannon)	1
		Bidder, Dr. A. (jun)	1	Brookfield, M.	12
Babbington (Prof.)	1	Bigot, A.	16	Brooks, H.C.	1
Baden-Powell, D.F.W.	96	Binney, W.	1	Brown, C. Barrington	1
Bagot, M.G.	1	Binney, E.W.	552	Brown, E.C.	1
Bairstow, L.	68	Binnie, W.B.	1	Brown, E.E.S.	10
Baker, G.B.	1	Binnie, W.E.	1	Brown, F.C.	24
Baker, James	1	Bishop, M.J.	477	Brown, Gareth	1
Baker, R.	49	Black, J.G.	1	Brown, Ida	32
Baldis, B.A.J.	30	Black, Maurice	227	Brown, J.	3
Baldry, R.A.	6	Black, W.W.	10	Brown, T.F.	1
Balfour, F.M.	11	Blackmore, H.P.	11	Browne, G.F.	6
Balfour Browne, J.W.	4	Blackmore Museum		Browne, W.Clayton	1
Banks (Miss)	2	Salisbury	31	Browning, J.C.	1
Banks, S.	18	Blake, F.J. (Rev.)	6	Brugnone	1
Banks, W.H.	17	Blencowe, E.E. (Rev.)	2	Bryan	11
Banton, J.T.	5	Blewitt, E.	14	Bryant (Clare	
Barber, R.	1	Bodger, J.W.	9	College, 1891)	36
Barber	3	Boit, B.	64	Bryant, J.F.	4
Barclay, F.H.	1	Bolton, H.	1	Brydone, R.M.	37679

Buchen, S.H.	1	Cave, Richard	480	Couper, R.A.	12
Buckle, W.F.	1	Chaloner, A.D.	10	Cowell, E.B. (Prof.)	10
Buckman, James (Prof.)	46	Champernowne, A.M.	14	Cowell, Hugh	4
Buckman, S.S.	543	Chandler, M.E.J.	870	Cowen, R.	13
Bulgaria,		Channon, P.J.	3	Cox, Ian H.	129
Akademii Nauk.	5	Chapman, A.	1	Cox, L.R.M.	35
Bull, A.	9	Chapman, F.	55	Coysh, A.W.	1
Bulman, O.M.B.	479	Chapman, K.M.H.	1	Crane, (W.E. or W.S.)	103
Bunbury, E.	1	Chapman, M.	1	Crashaw, L.T.	1
Burdett Coutts (Baroness)	28	Chapman	8	Craven, E.A.	2
Bureau of Mineral		Charlesworth, Edward	2	Creber, G.T.	26
Resources, Australia	2	Cheesman, A.	12	Crewdson, G.	1
Burkhill, J.K.	1	Cheetham, A.H.	2	Crick -	2
Burkitt, M.C.	9	Cheke, A.S.	1	Croft, W.N.	3
Burlingham, S.	1	Chesters, A.O.	1	Crosfield, M.C.	3
Burmah Oil Co.	126	Chivers, J.	1	Crump, E.C.	1
Burnaby, T.P.	40	Christiansen, J.	5	Cuany, R.L.	1
Burnham, C.P.	12	Chubb, E.C.	1	Cuffe, O.F.W.	15
Burr, A.	31	Chugaeva, M.N.	6	Cullen -	1
Burr, Malcolm	2	Ciba Ltd.	2	Cumberland, G.	12
Burrows, J.H.	4075	Clark, A.E.	10	Cumberland, R.	1
Bursill, C.	1	Clark, H.L.	5	Cumming, J.G.	3
Burton Brown, C.	5	Clark, J.	1	Cumming, L.M.	3
Bury, A.	1	Clark, J.W.	4	Cummins, W.A.	36
Bushnell, G.H.C.	1	Clark, T.H.	19	Curry, Dennis	532
Bushnell, G.H.S.	2	Clarke, B.S.	1	Curry, J.	1
Busson, G.	60	Clarke, F.R.	1	Curtis, C.H.	1
Butler, A.J.	113	Clarke, W.B. (Rev.)	404	Curtis, D.	2
Butler, B.C.M.	5	Clarkson, E.N.K.	1	Curtis, M.L.K.	6
Butler, F.H.	6	Clayton Browne, R.	1	Cutbill, J.L.	1
Butler, F.M.	1	Clifford, M.H.	1	Cyrot, J.E.	1
Butler, F.W.	2	Clifford, Peter	1		
Butler, G.N.	1	Clough, C.T.	2		
Butler, G.W.	90	Cobbold, E.S.	493	Dahll, Tellef (Prof.)	13
Butler, R.Weeden	170	Coble, K.M.	4	Daintree, Richard	1
Buxton, A.F.	7	Cockbain, A.G.	1	Dale, C.M.	3
Buxton, D.R.	2	Cockerell, T.D.	120	Dale, G.	1
		Cockerell, W.P.	1	Damon, Robert	7
		Cocks, L.R.M.	77	Damon, R.F.	23
Cabot, M.	1	Codd (Father)	1	Dant, C.S.	1
Cabot, R.M.	2	Coggin Brown, J.	10	Dant, Mark	1
Cadman, L.M.	2	Coignou (Miss)	1	D'arcy Exploration Co.	82
Cadman, M.H.	1	Coit, G.M.	12	Darnley, A.G.	1
Caldwell, F.E.S.	851	Colby, T.F.	62	Darwall, G.H.D.	2
Callaway, C.	7	Cole, Edith	2	Darwin, Charles	44
Callaway, S.	1	Colenutt, G.W.	15	Darwin, (D.H. or G.H.)	18
Calloman, J.H.	73	Coles Phillips, F.	6	Das Gupta, R.	5
Calvin, O.	1	Collier, K.G.	2	Dautzenberg, P.	11
Cambrian Research Lab.		Collignon, M.	2	David, T.W. Edgeworth	4
Statesville, N.Carolina	13	Collins, J.	44	Davidson, C.	1
Cambridge Free Library	1	Colter, V.S.	213	Davies, A.Morley	31
Cambridge, P.G.	3992	Colvin, G.A.	4	Davies, Catherine	2
Cambridge Folk Museum	4	Companie d'Exploration		Davies, John	114
Cambridge Spitzbergen		Petroliere		Davies, K.A.	43
Expeditions	130	Condamine, H.M. de la	5	Davies, L.	2
Cambridge Water Co.	7	Conder, J.S.	5	Davies, L.M. (Lt.-Col.)	18
Campbell, K.A.	55	Conlin, J.P.	12	Davies, R.G.	84
Campbell, K.S.W.	7	Conway Morris, Simon	16	Davies, S.M.	1
Canham, M.J.	1	Conybeare, J.W.E. (Rev.)	86	Davies, T.A.	1
Carabeuf	5	Cook, A.C.	12	Davis (Mr.)	1
Cargill, J.D.	1	Cook, A.L.	2	Davis, A.G.	4
Carpenter, P.H.	3	Cooke, B.S.	8	Davis, J.R.	2
Carr, J.W.	3	Cooke, D.	1	Davison, C.	31
Carr, W.D.	6	Cooke, H.B.S.	2	Daw, C.	1
Carrington, H. (Rev.)	320	Cookson, H.	506	Dawes, J.S.	3
Carruthers, R.G.	7	Cookson, R.	2	Dawson, G.M.	4
Carter, A.N.	2	Cooper, D. (Miss)	1	Day, C.D.	2
Carter, James E.	1560	Cooper, G.A.	8	Day, G.H. (Rev.)	8
Carter, R.M.	63	Cooper, R.L.	1	Day, J.W.	1
Carter, T.J.	1	Cope, R.N.	10	Deans, T.	4
Carter, W.L.	1	Copper, Paul	20	Deck, I.	3
Carter, W.M.	1	Cordey, W.G.	1	De Courcy, E. (Prof.)	2
Casey, R.	92	Corps, E.V.	18	Deichmuller, J.	5
Catt, F.	2	Correll, E.B.	2	Derognat (M.)	2
Cave, M.R. (Mrs)	5	Corrie (Mrs)	5	Deslongchamps	7

Dew, A.G.	2	Ettingshausen, C.F.von	4	Gardner, J.S.	2
Dewar, G.N.	1	Evans, I.H.N.	6	Garrett, C.	50
Dewey, H.	17	Evans, J.	5	Garrood, J.R.	4
Dewey, J.F.	36	Evans, J.J.	9	Garwood, E.J.	297
Dewick (Mr.)	1	Evans, P.	11	Gaspard, D.	35
Dibley, T.K.	1	Ewbank, L.	4	Gaster, C.T.A.	35
Dickson, C.W.	4			Gavey, G.E.	11
Dickson, G.H.	1			Gayer, R.A.	1
Dirac, F.	1	Fairbridge, R.W.	6	Gedge (Dr.)	8
Dirac, M.	17	Falcon, N.L.	3	Gee, E.R.	13
Dix, Emily	34	Falconer, J.D.	16	Geologists Association	10
Dixon, A. (Rev.)	24	Fallot, E.	3	Geological Division, Dept. Lands & Mines, Tanganyika	37
Dixon, A.L. (Sir)	6	Farren, R.	23	Geological Society of London	105
Dollfus, G.F.	3	Farren, W.	393	Geological Surveys:	
Don, A.W.R.	47	Fearnshides, A.W.	1	Brazil	41
Donald (Miss)	11	Fearnshides, W.G.	880	Canada	70
Donald, M.H.	1	Feilding, Rowland	14	Cape Colony	77
Doncaster, L.	1	Fenton, G.F.	1	Egypt	6
Donovan, D.T.	1	Fetherston, J.	1	Great Britain	10
Doran, W.E.	2	Piege, K.	25	India	947
D'Orbigny, A.	1	Findlay, D.C.	2	Iran	151
Dorset County Museum	1	Fischer -	2	Ireland	111
Doughty, C.M.	66	Fisher, J.	1	Kenya	51
Douville, H.F.	1	Fisher, J.H.	19	New South Wales	91
Dover, G.G.	1	Fisher, Osmond (Rev.)	5889	New Zealand	388
Dover, W.K.	342	Fison, W.B.	1	Nigeria	9
Drew (Miss)	3	Fitzgerald, E.A.	6	Rhodesia	10
Driscoll, E.C.	1	Fitzgerald Moore, P.	1	Rumania	38
Ducane, E.J. (Miss)	4	Flatman, E.	6	Scotland	74
Ducie, 5th Earl of	50	Fleming, C.A.	1	Tanganyika	170
Duckworth, J.S.	2	Fleming, P.J.G.	5	Victoria	73
Duckworth, W.L.H.	8	Fleming, W.L.S.	7	Geol. Survey Division, Bangkok, Thailand	5
Dufton -	1	Fletcher, T.P.	17	George, T.J.	160
Dun, W.S.	34	Fletcher, T.W. (Capt.)	5820	George, T.N.	12
Dunbar, C.O.	3	Florin, R.	1	Gerlache, L.	5
Durrant, W.H.	1	Flower, R.H.	40	Gerth, H.	59
Durrant, E.C.	1	Foord, A.H.	7	Getty, T.A.	4
		Forbes, C.L.	75	Gibbs (Miss)	2
		Forbes, J.G.	1	Gibby, D.	337
East (Mr.)	4	Forbes, W.H.	205	Gibson, A.E.	3
Easter, F.E.C.	1	Forbes-Young (Dr.)	243	Giffen, J.C.	1
Easterfield, T.H.	3	Ford, T.D.	23	Gilbert, D.H.	2
Edge (Mr.)	2	Forster (Miss)	2	Gilbertson, W.	24
Edge, A.R.	2	Forsyth, I.H.	5	Gilchrist, P.V.	1
Edgell, C.A.	1	Fortey, R.A.	62	Gildea, G.P.	1
Edmunds, F.H.	56	Fortin, R.	29	Gill, D.	1
Edward, G.	5	Foster, J.L.	2	Gill, H.A.C.	4
Edwards, Dianne	7	Foulger, A.R.C.	1	Gill, T.H.	1
Edwards, F.E.	42	Fountain, E.O.	9	Gilson, A.E.	1
Edwards, F.W.	6	Fowler, G.	1	Girton College, Cambridge	25
Edwards, G.	1	Fowler, H.	1	Gladstone, B.L.	1
Edwards, J.H.	177	Fowler, I.C.	1	Glaessner, M.F.	2
Edwards, J.K.P.	2	Fowler, J.	66	Glass, Norman	1
Edwards, K.	1	Foxall, W.H.	1	Glauert, L.	67
Edwards, R.	2	Francis, C.	1	Gloucester, City Museum	3
Edwards, R.A.	1	Franklin, W.A.	11	Gobbett, D.J.	616
Edwards, W.	6	Frest, T.	23	Godber, M.J.	1
Edwards, W.N.	14	Fritsch, A.	1	Godfrey, T.W.	2
Egerton, P.M.de G. (Sir)	4	Fuchs, V.E. (Sir)	20	Godwin-Austen, R.A.C.	1
Egyptian Government	9	Fulcher, P.	3	Goldsmith, R.	1
Elles, G.L.	3725	Fuller, J.G.C.M.	5	Golikov, A.	5
Walton, G.H. Elliot	680	Funnell, B.M.	15	Goodman, Neville	109
Ellis, W.	17			Gordon, W.T.	52
Else, William	5	Galloway, A.J.	29	Gotobed -	1
Eltringham, W.	1	Gallup, R.	2	Gourlay, W.B. (Dr.)	9
Emery, J.N.	1	Galvez, A.H.	1	Grabau, A.W.	1
Engel, T. (Pfarrer)	293	Gamble, William	784	Grant Wickwire, T.	14
Englebright, S.	2	Gardener, J.	6	Grateloupe, J.P.S.de	15
Enniskillen, 3rd Earl of	2	Gardiner, C.I.	646	Gray, C.E.	19
Entwhistle, A.R.	2	Gardiner, J.	3	Gray, J.	2
Erdtmann, B.D.	3	Gardiner, J. Stanley	65		
Erni -	1	Gardiner Williams -	1		
Eskdale, I.K.	1	Gardner, E.W.	77		
Essenhigh, R.H.	1	Gardner, J.	1		
Etheridge, Robert	6				

Gray, K.W.	6	Hayden -	6	Hughes, G.A.	1
Gray, Robert (Mrs.)	391	Hayward, J.F.	1	Hughes, H.W.	4
Great Ouse River Board	8	Heath, M.	1	Hughes, J.	1
Green, A.G.N.	1	Hede, E.	12	Hughes, J.P.	1
Green, G.E.	8	Heidelberger Mineralien-		Hughes, M.C.	7
Green, Upfield	28	Comptoir	1	Hughes, N.F.	77
Greenwood, P.B.	1	Heighton, H.J.	8	Hughes, T.McKenny	3238
Gregory, J.R.	1	Hemingway, J.E.	70	Hughes, T.McKenny (Mrs)	9
Gregory and Bottley	1	Hemingway, W.	58	Hugh Jones, D.L.	1
Grenfell, J.G.	1	Hemsley, K.D.G.	101	Humble Oil and	
Grenfell, L.E.	2	Hendricks, E.M.L.	30	Refining Co.	208
Grensted, L.W.	16	Henningsmoen, G.	45	Humphreys -	2
Griffith, A.F.	27	Henry, Jean Louis	21	Hunt, A.R.	7
Griffith, S.H.	1	Henslow, G. (Rev.)	71	Hunt, J.A.	5
Griffith, R.J. (Sir)	500	Henslow, J.S.	31	Hunt, M.	1
Grimsdale, T.F.	43	Henson, F.R.S.	592	Hunter, D.	1
Grogan, J.D.	1	Herbage, D.L.	10	Hunter, P.V.	6
Groom, T.T.	49	Herdman (Miss)	2	Hutchins, P.F.	14
Gross, W.	2	Herries, R.S.	114	Hutchinson, H.N.	1
Grossouvre, A.de	320	Herries, W.H.	227	Hutt, Jana E.	615
Grove, A.T.	352	Hervey, A.C.	1	Huxley, T.H. (Prof.)	1
Gudex, M.C.	93	Hess, H.	1		
Guest, H.	1	Hess, J.P.	1		
Gulf Eastern Company	7	Hester, S.W.	2	Ignatowicz, M.	1
Gunn, J. (Rev.)	1	Hewitt, H.Dixon	251	Illing, L.V.	25
Gunther, Lloyd F.	20	Hey, R.W.	417	Illing, V.C.	66
Gurney, A. (Miss)	2	Heys, G.M.	7	Image, I.	2
		Hibert, S.	3	Image, M.	8
Haddon, A.C.	9	Hickling, George	1	Image, T. (Rev.)	10
Haddon, K. (Miss)	2	Hicks, Henry	287	Image, William Edward	1
Hadfield, J.M.	1	Hicks, E.	1	Institut Royal des	
Hailstone, John (Prof.)	1	Hicks, G.M.	1	Sciences Naturelles	
Haines, H.Y.	1	Hief, F.R.G.	2	de Belgique	29
Halifax (Miss)	1	Higham, C.W.R.	1	Institute of Geology,	
Hall, S.J.	5	Hill, Dorothy	688	Moscow	28
Hall, T.S.	2	Hill, William	33	Ioannides, N.S.	3
Hallam, A.	453	Hind, Wheelton	97	Iraq Petroleum Co.Ltd.	621
Hallifax, E. (Miss)	2	Hinde, G.J.	374	Irish National Museum,	
Hamling, J.G.	4	Hinxman, L.W.	1	Dublin	2
Hammond, P.	2481	Hodson, F.	41	Irving, A.	66
Hampton, J.S.	7	Hogg, H.H.	1	Ishida, T.N.	1
Hancock, J.M.	365	Holbek, Olga	3	Issel, A. (Prof.)	1
Hanover College,		Holder, H.	10	Ivatt, A.	1
Indiana, U.S.A.	58	Holliday, D.W.	7	Ivatt, T.	4
Hansen, Helge (Prof.)	11	Holling, J.C.	1		
Hanzawa, S.	25	Hollingworth, M.E.J.	4	Jaccard, A.	6
Hardaker, W.H.	28	Hollingworth, S.E.	12	Jackson, B.J.	1
Harding, S.	1	Holmes, John	18	Jackson, D.E.	123
Harker, A.	24	Holmes, S.C.A.	234	Jackson, J.F.	215
Harker, P.	12	Holmes, T.W.	1	Jackson, L.	71
Harkness -	1	Holt -	1	Jackson, R.T.	1
Harland, W.A.	1	Homfray, David	168	Jacobs, R.	2
Harland, W.B.	55	Hope, M.L.	2	Jaeger, H.	32
Harlock, E.N.	33	Hopkin, Stanley R.	1	Jagoe, R.	1
Harlock, F.L.	1	Hopkins, William	361	Jameson, R.B.	2
Harmer, F.W.	1052	Hopkins, W.B.	3	Jardine, W.	1
Harper, D.A.T.	31	Hopkinson, John	654	Jarvis, Mary	1
Harper, J.C.	21	Hort -	8	Jeans, C.V.	2
Harris, G.F.	3805	Houghton, F.T.S.	5	Jeason, T.	1
Harris, M.A.M.	317	House, M.R.	46	Jefferies, R.P.S.	2826
Harris, T.M.	25	Howard, G.	2	Jefferson, T.H.	4
Harrison, J.C.	1	Howard, John	43	Jehu, T.J.	172
Harrison (Mr. of Keswick)	2	Howard-Fox	1	Jenkins, C.	3
Hart, R.J.	2	Howarth, M.K.	1165	Jenkins, H.M.	1
Hartland -	1	Howatson, D.C.	3	Jenkins, W.A.M.	121
Hatch, F.H.	7	Howe, M.J.	1	Jenkinson, J.J. (Rev.)	25
Haug, Emile	1	Howells, Yvonne	264	Jenkyn, T.R.	1
Haughton, S.H.	14	Howie, R.A.	1	Jennings, (C.R.or R.C.)	23
Hawkes, L.	6	Howie, R.J.	10	Jennings, John	1
Hawkes, R.	1	Hudleston, W.H.	9644	Jesson, T.	58
Hawkesworth, E.	12	Hudson, J.D.	1011	Jewson, P.K.	4
Hawkins, H.L.	3	Hudson, R.G.S. (Prof.)	6	Johnson, G.L.	90
Hawkins, Thomas	16	Hue, J.B.	1	Johnson, W.H.	90
Hawkrigde, P.	2	Hugel, A.von (Baron)	18	Johnston, Mary	36
		Hughes, C.P.	710		

Johnston, R.W.	4	Koch, W.E.	2	Linton, J.	1
Johnstone, C.W.	1	Koninck, L.G.de	185	Lister, J.J.	55
Jonas, H.M.	1	Koninck, M.de	10	Liveing, G.D. (Prof.)	34
Jones (Capt.)	91	Koren, T.N.	41	Llewellyn, P.G.	1
Jones, E.L.	25	Kowes, P.D.	1	Lloyd, G.C.	1
Jones, H.L.K.	1	Kozlowski, Roman	97	Lloyd, R.	2
Jones, I.W.	4	Krantz, A. & F.L.R.	264	Lloyd-Jones, E.	644
Jones, J.	3	Krishnaswami, V.D.	4	Llwyd, Robert	4
Jones, O.A.	164	Kugler, H.G.	13	Lock, B.E.	120
Jones, O.T.	2431	Kuhne, W.G.	12	Lofts, E.F.	2
Jones, Stead	104	Kurz, W.	1	Lohest, M.Max	8
Jones, T.R.	65	Kynaston, H.	332	Lomax, James	7
Jones, W.D.V.	1971			Lotherington, E.B.	14
Joubert, J.R.	1	Laffoley, N.	1	Love (Mr.)	2
Joysey, K.A.	39	Lake, Philip	573	Low, G.J.	1
Jukes, J.B.	2	Lake, P.I.	1	Lucas, M.	1
Jukes-Browne, A.J.	1549	Lamb, C.G.	15	Lucy, W.C.	1
		Lamb, S.H.	1	Luddington, J.	1
Kay, Henry	196	Lambert, R.St.J	5	Ludford, A.	8
Kay, Marshall	26	Lamborn, Richard	12	Lumby, J.	2
Kearsley, A.T.	3	Lane, P.D.	56	Lundgren, S.A.B.	2
Keeping, Henry	2303	Langdale -	2	Lushington, R.G.	7
Keeping, Walter	241	Lapworth, Charles	72	Luxmore, E.B.	108
Keith, M.B.	1	Large, H.	25	Lycett, John	6
Kellett Capt.	11	Large, N.F.	16	Lyell, Charles (Sir)	456
Kelly, F.B.	1	Larsson, Kent	41	Lynas, B.D.T.	412
Kemp, A.H.	1	Larwood, G.P.	117		
Kendall, C.E.Y.	3	Latchmore (Mr.)	1	MacCarthy, C.P.	5
Kendall, M.W.	1	La Touche, T.H.D.	1	Macfadyen, W.A.	790
Kendall, P.	1	La Touche, W.M.de	1	MacGregor, A.R.	195
Kendall, P.F.	1	Latter, M.P.	1	MacInnes, D.G. (also spelt McInnes)	52
Kennard, A.J.	20	Laud, Michael	1	Macintosh, R.A.	2
Kennard, A.S.	209	Laufeld, Sven	21	Madsen, Victor	30
Kennedy, A.S.	36	Law, J.E.	3	Maggs, T.C.	3
Kennedy, H.M.	2	Lawrence, A.L.	1	Majendie, A.M.A.	1
Kennedy, H.T.	17	Lawrence, A.M.	1	Manglis, C.P.	371
Kent, P.E.	53	Lawson, D.A.	1	Mantell, Gideon Algernon	2
Kenworthy, J.	1	Lawson, J.D.	52	Marchant, S.	22
Kershaw, J.W.	1	Leach, H.B.	10	Marchese di Monterosato	3
Keswick Museum	1	Lebour, G.A.L.	2	Markham, H.	1
Ketley, C.	14	Leckenby, John	7282	Markwald and Co.	208
Keynes, C.L.	1	Le Compte, M.	32	Marr, J.E.	1728
Kiaer, Johan	23	Lee, A.S.	8	Marr, F.A.	34
Kidston, R.W.	28	Lee, J.B.	16	Marsh, O.C.	7
Kier, Porter M.	48	Lee, J.E.	6	Marsh, R.	81
Killick, H.	2	Lee, J.G.	18	Marshall (Miss)	1
Kilpatrick, P.J.W.	61	Lee, J.H.	10	Marshall, D.	1
Kilpatrick-Wilson -	6	Leeds, A.N.	16	Marshall, J.	1
Kimber, G.	10	Leeke, C.	1	Marshall, M.A.	2
King, W.B.R. (Prof.)	1471	Leeke, H.	1	Marshall, N.	1
King, D.F.	1	Leeson, J.R.	14	Marshall, W.	15
King, H.J.	147	Leggett, J.K.	139	Marten, John	41
King, M.A.	2	Lehest, M.Max	1	Martin, A.J.	2
King, W.Wickham	11	Le Lacheur, W.J.	1	Martin, E.	1
Kingswood School Museum, Bath	1	Leslie, (T.N.?)	1	Martin, H.T.	1
		Leslie, E.J.	1	Mashkova, T.V.	80
Kirchgasser, W.T.	38	Le Strange, Hamon	4	Mathey, M.	20
Kirk, Nancy	63	l'Estrange, P.H.	1	Matley, C.A.	14
Kirton, C.J.B.	78	Lewin, H.W.	1	Matthew, G.F.	46
Kitching, J.A.	1	Lewinton -	1	Matthews, D.W.	2
Kitson, R.H.	1	Lewis, H.P.	36	Matthews, S.C.	4
Klenerova, H.	4	Lewis, R.M.	1	Matthews, S.	1
Klenova, G.	4	Lewis, W.A.D.	295	Maubeuge, P.L.	2
Klose, William F.II	23	Lewis, W.A.H.	57	Maufe, H.B.	1
Knapp -	1	Lewis -	1	Maule, H.G.	2
Knecht, K.	6	Leys School, Cambridge	338	Maxwell (Mr.)	1
Knight, J.L.	54	Liardet, T.W.	1	May, R.	1
Knight, M.A.G.	2	Lightbody, Robert	82	Mayo, (H.T or T.H.)	47
Knill, J.L.	1	Lille, P.	3	McCabe, P.J.	17
Knipe, C.V.	8	Lilley -	1	McCarthy, M.	8
Knowles, L.	7	Lillie, A.G.	15	McConnel, E.W.J.	1
Knox, R.	11	Lillie, A.R.	2	McCulloch, N.B.	5
Knox, R.V.E.	4	Lillie, D.G.	273	McDougell, M.	1
Knox, R.W.O'B.	5	Lindstrom, Gustaf	315		

McGregor, A.M.	2	Naturmuseum 'Senckenberg'	3	Part, G.M.	68
McGugan, A.	107	Negus, P.E.	18	Part, W.M.	1
McKerrow, W.S.	92	Nekvasilova	13	Partridge, E.	1
McKinney, F.K.	4	Nelson, N.E.	74	Patel, I.	16
McLaren, D.J.	1	Nettleton, S.	2	Paterson (Miss)	2
McMurtry, M.J.	524	Newall, H.F.	1290	Paterson, T.T.	4
McNamara, K.J.	880	Newton, B.	1	Patten, W.	9
McPhee (Miss)	4	Nichol, J.S.	16	Paul, C.R.C.	1012
Meijer -	13	Nicholas, T.C.	1043	Pauntly (Mr.)	4
Melle (Dr.)	1	Nicholls, G.D.	1	Pavlow, A.P.	133
Melou, M.	4	Nicholls, J.M.	3	Pay, A.W.	1
Melville, R.V.	3	Nichols, D.	1	Payne, R.W.D.	2
Meyer, C.J.A. & C.H.	9661	Nicholson, B.C.	1	Peabody Museum,	
Michie, G.M.	1	Nicholson, H.A.	443	Yale University	2
Middlebrook, J.	52	Nicholson, T.	1	Pearse, H.	14
Middleton, J.	1	Nicol, J.S.	189	Pedder, A.	3
Mihaljovic, M.	46	Nishida, T.	3	Peirce, E.G.	1
Miller (Dr.)	1	Nixon, J.M.	3	Penruddock, M.A.	4
Miller, T.G.	27	Nixon, L.	4	Penton, E.	127
Miller, (S.A.?)	1028	Nordgaard (Dr.)	1	Perceval, Spencer George	35
Milligan, D.	1	Nordmann (Dr.)	2	Perowne, E.H.	152
Milner, H.B.	5	Norman, (M.W.?)	3	Perry, J.T.	44
Mines & Geology		Norris, W.H.	1	Peskett (Miss)	2
Department, Kenya	27	North, F.J.	3	Peters, E.	1
Mining Museum, Sydney	46	Norwood, D.A.	2	Peters, J.	3
Minty, K.W.	1	Norwood, M.E.	1	Petter, G.	1
Mitcham, B.C.	1	Nott, C.H.	1	Peyrot (Prof.)	1
Mitchell, G.H.	1	Nott, C.R.H.	4	Philip, G.M.	2
Mitchell, J.	30	Nuttall, C.P.	3	Phillips (Miss)	1
Mitchell, M.	14	Nuttall, W.L.F.	2346	Phillips, A.W.A.	2
Mitchell, S.W.	123			Phillips, D.	1
Mockler, F.	3	Oakley, K.P.	26	Phillips, F.Coles	3
Moir, J.Reid	32	Obeyesekere, F.A.	1	Phillips, John (Prof.)	21
Mojsisovics, E.von	3	Obut, A.M.	24	Pigott, C.D.	2
Money, M.S.	1	O'Connor, B.	4	Pinfold, E.S.	2
Monk, Henry	1505	Odell, J.	14	Piper, D.J.W.	84
Montagu-Smith	8342	Odell, N.E.	1	Piper, G.H.	4
Moore, C.	31	Ogura, T.	46	Pitchford, J.D.	1
Moore, D.H.	2	O'hara, M.J.	1	Plant, J.	31
Moore, E.W.J.	188	Oliver, G.H.	3	Plummer, F.R.	7
Moore, R.W.	6	Oliver, J.	2	Plumptre (Miss)	1
Moore, T.M.	1	Opik, A.A.	37	Plumstead, E.P.	2
Moore, W.	1	O'reilly, A.J.	2	Pochin, V.R.	1
Morch	2	Osborne, Fitz	595	Pocock, R.W.	2
Morell, R.S.	1	Outram, F.H.	21	Poignard (Dr.)	6
Morley, W.	35	Ovey, C.D.	13	Pollard, G.	5
Morris -	1	Owens, R.M.	38	Pollard, W.B.	1
Morris, George	84	Oyen	2	Pollexfen, J.H.	82
Morton, N.	196	Ozanne, P.C.	1	Pollock, C.M.	1
Moseley (Miss)	7			Pomeroy Expedition	340
Moseley, F.	13	Packe, H.	1	Pope-Bartlett, B.	1
Moysey, L.	366	Packham, G.H.	16	Porteous, B.	1
Moysey, R.	5	Page, J.S.	1	Porter -	1
Muff, H.B.	7	Page, K.N.R.	7	Porter, Henry	1
Muir-wood, H.M.	12	Paget, George (Sir)	1	Porter, N.T.	2
Munster, Georg Graf von	2998	Paget-Fulcher	5	Porter (Mr. of Pilton)	349
Murchison,		Palmer, D.	1	Portlock, J.E.	1
Charlotte (Lady)	61	Palmer, K.D.	1	Potts, F.A.	34
Murchison, R.I. (Sir)	5	Parish, W.	44	Potts, T.A.	1
Murcott, A.	1	Parke, J.	1	Pratt, L.D.	2
Murcott, A.	1	Parker, C.J.	2	Prendergast, K.M.	9
Murray, P. (Dr.)	2	Parker (Mrs.)	8	Prentice, J.E.	2
Murrell, G.	1	Parkinson, D.	7	Preston, H.	1
Museum of Comparative		Parkinson, J.	7	Price, David	573
Zoology, Harvard	55	Parkinson, M.L.	7	Price, G.M.	6
Museum Regni Bohemiae	2	Parks, W.A.	69	Price, M.P.	53
Musgrave, George (Sir)	1	Parnell, F.R.	1	Price, T.D.	1
Musgrove, V.	2	Parnell, John	1	Priestley, R.E.	13
		Parr, W.J.	4	Prince, T.	5
Nakamura, S. (Prof)	5	Parrington, F.R.	2	Pringle, J.	4
National Museum of		Parry, B.B.	8	Prior, E.S.	1
Victoria, Melbourne	26	Parry, Joy	1	Prior, M.R.	3
Nathorst, A.G.	43	Parsons, H.F.	50	Prismall, S.E.	3
Naturhistorika				Proctor, M.C.F.	2
Riksmuseet, Stockholm	1			Pryor, M.R.	7

Pulfrey, W.	2	Russell -	4	Simpson, P.	2
Purcell, D.	3	Russell, J.	1	Simpson, P.R.	1
Pye, Malcolm	1	Russell, J.L.	1	Simpson, R.D.H.	2
Pyre, Austin	7	Russell, T.D.	1	Sims, L.G.C.	1
		"Russian Government"	49	Sinclair, G.Winston	32
Quayle, W.J.	19	Ruthven, John	2	Singleton, O.P.	14
Quenstedt, F.A.von	3	Ruxton, B.P.	3	Siveter, Derek	110
Quirk, R.N.	4			Skeat, E.G.	2
				Skeat Cambridge	
		Sackett, A.B.	6	Expedition to Siam	5
Raban, H.B.	2	Saemann, Louis	54	Skevington, D.	58
Raban, H.C.	2	St.Joseph, J.K.S.	180	Skinner, J.W.	6
Ramsbottom, W.H.C.	10	St.Xavier's		Slater, I.L.	147
Randall, J.M.	1	College, Bombay	1	Smallwood, S.R.	3
Rasmussen, H.W.	39	Sale, H.M.	4	Smith (Mr.)	2
Rastall, R.H.	98	Sales, R.	3	Smith, Bernard	19
Ravenshear, E.W.	2	Salisbury & South		Smith, D.G.	1
Raw, Frank	32	Wiltshire Museum	33	Smith, David	10
Rayment, R.A.	9	Salter, J.W.	5	Smith, Stanley (Dr.)	2
Rayner, D.H.	12	Salter, M.	2	Smith, F.	2
Reade, T.Mellard	178	Salvin, O.	3	Smith, F.A.	2
Reader (Mr.)	1	Sanders, I.S.	1	Smith, F.B.	1
Red Sea Petroleum Co.	24	Sanders, W.	1	Smith, F.W.	1
Redstone, S.I.	1	Sass, D.B.	6	Smith, G.C.	1
Reed, F.R.C.	2997	Saunders, J.	4	Smith, H.W.	1
Reed, William	31	Saunders, W.	3	Smith, J.	7
Reid, Clement	93	Savin, Alfred C.	2	Smith, J.H.Stuart	1
Renevier, Eugene	5	Saxby, S.M.	1	Smith, Jeremy	7
Resser, C.E.	6	Saxton, (W.I.or W.J.)	3	Smith, K.	1
Reynolds, E.P.	1	Schenck, H.G.	20	Smith, P.W.	5
Reynolds, S.H.	665	Schleiger, Noel	32	Smith, R.	2
Rhodes, E.C.	1	Schmid, E.E.	1	Smith, R.	67
Rhodes University	106	Schmidt, Friedrich	2	Smith, Stanley	53
Richardson, C.	11	Schon, B.	6	Smith, T.W.	1
Richardson, D.	4	Schrammen, A.	196	Smith, W.	5
Richardson, F.D.S.	29	Sclater, A.J.R.	27	Smith, W.R.	1
Richardson, J.	7	Scobie, M.J.	3	Smith, Winifred	1
Richardson, L.	7	Scott, D.H.	1	Smithsonian Institution	17
Richardson, W.	3	Scripps Institute of		Smythies, E.A.	2
Richie, A.	2	Oceanography	13	Sollas, W.J.	17
Richter, P.B.	4	Sdzuy, Klaus	1	Solley, R.H.	1173
Rickards, R.B.	449	Seaborne, M.V.J.	119	Somaliland Petroleum Co.	3633
Rider, W.E.	1	Seale, R.S.	2	Somerset County Museum	8
Ridgeway (Prof.)	1	Sedgwick, Adam	52	South African Museum	75
Rilett, M.H.P.	25	Sedgwick Club	81	Sowerby -	1
Riley, K.A.	1	Seeley, H.G.	9	Sparks, B.W.	12390
Ripper, B.	27	Sennikov, Nikolaj	3	Sparre Schneider (Dr.)	4
Ripper, E.A.	3	Sennitt, B.F.C.	6	Spath, L.F.	70
Riva, J.	685	Sergeant (Miss)	5	Speight, R.	23
Roberts, R.G.	1	Sergeant, D.E.	1	Spencer, H.E.P.	2
Roberts, R.H.	1	Sevastopulo, G.D.	12	Spencer, J.F.A.	1
Roberts, Thomas	1015	Seward, A.C.	129	Spencer, L.J.	9
Robertson, Ian	1	Shakespear, Ethel (Dame)	148	Spencer, S.G.coll.	1
Robertson, R.H.S.	68	Shaler (Prof.)	4	Spencer, W.K.	8
Robinson, P.L.	11	Sharman, D.T.V.	3	Spencer, G.P.	6
Roden, P.F.C.	1	Sharman, J.	22	Spjeldnaes, Nils	67
Roeper, A.de	1	Sharpe, D.	1	Spooner -	2
Rogers, A.W.	1	Shaw, R.W.L.	125	Spyropoulos, Lydia	5
Rogers, C.W.M.	1	Shaw, W. (Rev.)	15	Stainbrook, M.A.	35
Rogers, A.Inkerman	73	Shaw, W.A. (Rev.)	180	Stallybrass, F.C.	1
Rolland, F.K.	3	Shawcross, B.E.	3	Standen, E.	1
Rollier, Louis	71	Sheldon, P.R.	73	Stanford University	6
Romanes, J.	2	Shell Development		Stanger, William	16
Rookes, F.	1	(Queensland) Collection	2	Stanley (Miss)	1
Roscoe, G.L.	1	Sherborn, C.D.	6	Stanley (Mrs.)	1
Rose, C.B.	16	Shergold, J.H.	23	Stather, J.W.	2
Rowe, A.W.	7	Sherrard, Kathleen	8	Steers, J.A.	3
Royston, E.W.	1	Sherwin, Lawrence	84	Stephanov, J.	1
Rozman, H.S.	41	Shirley, J.	1	Stephen, R.	1
Ruddy, Thomas	88	Shotton, F.W.	264	Stephens, Darell	30
Rudwick, M.J.S.	779	Shrubsole, G.W.	28	Stephens, J.V.	2
Ruegg, W.	10	Sibly, T.F.	2	Stephenson, D.G.	252
Rufford, P.J.	64	Sikes, R.	1	Stephenson, P.	1
Rushton, A.W.A.	603	Silver, O.B.	1	Stephenson, R.	14
		Simpson, A.J.	7	Stevens, G.R.	11

Stevenson, S.	1	Thurrell, R.G.	166	Tokyo	35
Stewarts & Lloyds Ltd.	2	Tilley, C.E.	1	Western Australia	44
Stigand, I.A.	3	Tindall -	2	Western Queensland	1
Stirrup, M.	1	Tipping (Mrs.)	1	University College,	
Stockley, G.M.	9	Titherington -	1	London	1
Stokes, G.H.	1	Tjernvik, T.	13	Urbanek, Adam	65
Stokes, R.W.	7	Todd, J.V.	6	Ure, E.M.P.	2
Stokes, W.	77	Toghill, P.	163		
Stormer, Leif	1	Tomczyk, H.	26		
Stott, R.W.	12	Tomkins, Charles	2	Vallance, G.	7
Stow, D.	490	Tomlin, J.R.	2	Van Breda, J.G.S.	3
Strachan, I.	26	Torrens, H.S.	5	Van der Wouwer	7
Strauch, F.	9	Totcham, W.	2	Van Lennep, A.P	1
Straw, S.H.	1	Smith, J.Toulmin	1	Vansittart, A.A.	3
Strickland, H.E.	3645	Townrow, J.A.	5	Vassall, H.	1
Strong, L.	1	Townsend, J.	6	Vaughan, Arthur	516
Strutt, G.H.	62	Tracy, F.W.	5	Vaughan, T.Wayland	64
Stuart Smith, J.H.	3	Traquair, R.H.	22	Veevers, J.	5
Stubbington, F.	1	Treacher, L.	1	Vernon, R.D.	112
Stubblefield, C.J. (Sir)	93	Treagus, J.	20	Vernon, R.O.	26
Stuer, A.	2	Trchmann, C.T.	35	Vertheuil, G.F.de	1
Sturge, J.	1	Trinder, P.D.	2	Verneuil, P.E.P.de	44
Sturtz, B.	49	Trinity College,		Vevers (Dr.)	1
Sudbury, Margaret	357	Cambridge	2	Vicary, W.	78
Sullivan, J.W.	13	Tripp, R.P.	61	Vickers, M.	1
Sutcliffe, W.H.	11	Tristram, (H.B.?)	1	Vilanova y Piera, J.	16
Sutherland, P.K.	258	Trueman, A.E.	122	Villoutreys	1076
Swainson, F.E.	1	Tunncliff, S.P.	2	Vine, F.J.	1
Swann, A.J.T.	13	Tupper, J.L.	1	Vines, R.C.B.	1
Swann, J.	2	Turkish Petroleum Co.	22	Vinogradsky, H.	1
Swanston, F.G.S.	1	Turnbull, H.	1	Vinter, H.W.	2
Swanston, W.	34	Turnbull, V.M.	3562	Voigt	3
Swinnerton, H.H.	16	Turner, C.	1	Voigt, E.	49
Symonds (Mr.)	6	Turner, Charles	1	Voigt, H.	35
Symonds, W. (Rev.)	7	Turner, H.S.	1		
		Turner, J.Selwyn	1		
		Turner, W.L.	1	Waddington, C.H.	117
Tailor, S.	3	Turner-Collin (Mrs.)	5	Waddow, D.E.	1
Tarlo, L.B.H.	2	Turrall, R.G.	199	Wade, R.T. (Rev.)	8
Tasburgh, M.	16	Tweedie, M.W.F.	42	Wade, Thomas (Prof., Sir)	1
Tate, J.S.	31	Tyndale Biscoe, H.L.	9	Wainwright, R.E.	2
Tavener-Smith, R.	14	Tyndale Biscoe, R.	1	Wakeman, C.G.	6
Tawney, E.B.	2375	Tyrrell, J.B.	3	Walcott, C.D.	72
Taylor, G.C.	2			Walker, A.C.	9
Taylor, H.E.	49			Walker, Bryan	6
Taylor, H.M.	3	Ubaghs, C.	1037	Walker, E.E.	20
Taylor, J.	1	Umbgrove, J.H.F.	294	Walker, F.	1
Taylor, J.C.	6	Underhill, H.	1	Walker, F.G. (Rev.)	1
Taylor, J.H.	132	United States National		Walker, F.M.	174
Taylor, P.	1	Museum, Washington	1548	Walker, J.F.	5134
Taylor, R.H.R.	1	Universitets		Walker, (J.F.?)	188
Teall, J.H.	1	Paleontologiska		Walker, J.H.	1
Tebbutt, C.F.	45	Museum, Oslo	96	Walker, J.P.	1
Tedham, W.F.	1	University of		Walker, M.	349
Teller, L.	19	Belfast (Queen's)	75	Walker, P.J.	1
Temple, J.T.	257	Birmingham	5	Walker, W.	27
Tennant, J.	3	Bristol	7	Wallace, E.R.	4
Tennyson, Alfred (Lord)	11	Buenos Aires	22	Wallich, N.W.	62
Tesch (Dr.)	2	California	23	Wallis, F.P.	2
Thames Conservancy Board	3	Cambridge		Wallismalel, H.B.R.	1
Theobald, F.W.	12	(Botany School)	1	Wally, P.J.	2
Thickpenny, Andrew	46	Copenhagen	87	Walter, A. (Miss)	4
Thierry, J.	2	Gent	1	Walter -	4
Thomas, A.T	1063	Harvard	9	Walters, A.	1
Thomas, D.E.	16	Houston	104	Walther (Dr.)	1
Thomas, H.Dighton	17	Hull	1	Walton, J.	1
Thomas, H.Hamshaw	60	Indiana	58	Walton, William	10987
Thomason, K.C.	1	Jerusalem	15	Wandesforde, H.Prior	1
Thompson, J.	3	Kyushu	2	Wang, H.C.	37
Thomson, J.Allen	19	Liverpool	69	Wanklyn, A.	18
Thomson -	1	Melbourne	56	Warby, Walter	2
Thorncroft, T.H.	1	New England	5	Ward, J.	6
Thornton, M.S..	405	Oxford	5	Ward, J.H.	1
Thorslund, Per	5	Prague (Karlova)	77	Ward, (J.C.?)	1
Thorsteinsson, Radnor	157	Reading	25		

Ward's Natural Science Establishment, Rochester	12	Whitmell, C.T.	1	Wood, E.M.R.	43
Warrington, G.	1	Whitmore, G.T.	2	Wood, F.	1
Warman, H.R.	10	Whittaker, V. (Mrs.)	18	Woodham, D.J.	2
Warren, P.S.	35	Whittard, W.F.	92	Woods, Henry	471
Warren, P.T.	30	Whittington, H.B.	1260	Woods, P.J.E.	31
Warrington, S.	1	Whittles, C.L.	1	Woodward, D.H.	1
Watson, B.W.	1	Whyte, E.Towry	1	Woodward, F.R.	1
Watson, D.M.S.	2	Wicks, W.H.	2	Woodward, H.	3
Watson, Hugh	20	Wickwire, G.T.	55	Woolley, J.B.	1
Watson, John	14	Wigram, R.	1	Woolnough -	1
Watts, W.W.	31	Wilcockson, W.H.	119	Woosham, C.T.	20
Webby, B.D.	13	Wilde, G.L.	162	Wordie, J.M.	59
Webster, R.D.	1	Wilding Jones, C.L.	1	Worsley (Mrs.)	8
Wedd, C.B.	53	Williams, Alwyn	4036	Worsley, D.	12
Weevers, R. de C.	1	Williams, C.F.	2	Wright (James?)	12
Wellburn, E.	36	Williams, G.J.	18	Wright, A.D.	1
Wells, C.	1	Williams, J.H.	3	Wright, Bryce M.	152
Wells, C.M.	1	Williamson, John	1	Wright, C.	5
Wells, J.W.	14	Williamson -	20	Wright, C.W.	214
West, H.D.	1	Willis, J.H.A.	1	Wright, D.M.	1
West, R.G. (Prof.)	3692	Wills (Miss)	1	Wright, G.Arthur	2
West, W.D.	7	Wills, K.J.	1	Wright, James	161
Westergard, A.H.	9	Wills, L.J.	583	Wright, L.V.	3
Westermann, G.	1	Willy, E.A.	2	Wright, Richard	1
Western Australia University	15	Wilman (Miss)	2	Wright, W.B.	5
Weston, C.H.	1	Wilson, C.P.	1	Wright, Whitworth F.	5
Weston, T.C.	25	Wilson, E.	4	Wright (Thomas?)	62
Wetherell, (J.W.?)	1	Wilson, L.D.	1	Wyley, J.F.	12
Whealler, J.E.A.	14	Wilson, V.	1	Wyley, W.K.	51
Wheat, P.	1	Wilston, E.	1		
Whidborne, G.F.	5651	Wiltshire, S.	1	Yardy, S.J.	1
Whittaker, J.	1	Wiltshire, T.W.	7925	Yeates, P.H.	4
Whitby -	1	Winnicott	2	Yeoman, A.H.C.	2
Whitcomb, L.	1	Winship, A.J.	1	Yorkshire Museum	3912
White, E.J.	3	Winstone, W.	3	Young, Evelyn	1
White, F.E.	2	Winterbotham, W.	12	Young, J.	16
White, J.E.	2	Wisbech Museum	139	Young	464
Whitehall Petroleum Corporation	27	Wiskin, J.	1		
Whitehouse, F.W.	232	Witchell, E.	5	Zetland, Earl of	1
Whitman, T.	1	Wollaston, R.	9	Zittel, V.	132
		Wollemann, A.	1		
		Wood (Lt.)	10		

APPENDIX

Major collections not yet computer-catalogued.

Maurice Black collection of recent molluscs, calcareous algae etc. from the Bahamas: c.900 specimens.

Maurice Black collection of transmission electron micrographs of coccoliths (glass plates); a high proportion of figured specimens and over 100 iconotypes: c.13,000 specimens.

P.G. Cambridge collection, miscellaneous: several thousand specimens.

S.R.A. Kelly collection, Jurassic and Cretaceous: c.5,000 specimens.

W.A. MacFadyen collection of Foraminifera, including type and figured specimens: over 300 well-filled cavity slides.

M.J. Orchard collection of Ordovician and Devonian conodonts and other microfossils; includes type and figured specimens.

William Pengelly cave bone collection, Kent's Cavern: c.300 specimens.

Ph.D. Thesis collections:

S.J. Baker	C.J. Jenkins
S.D.G. Campbell	P.M. Magor
P.R. Crowther	R.M. Woods
R.H. Hughes	J.A. Zalasiewicz

The museum is also about to incorporate the large collection of palynological material (preparations, slides, scanning electron micrographs, and SEM stubs) built up by the research school led by Dr. N.F. Hughes.

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MAKING LATEX PEELS OF SOILS AND SOFT SEDIMENTS

BY MARTIN WARREN

INTRODUCTION

The making of replicas by shallow surface impregnation has been used by soil scientists and sedimentologists for almost 50 years. It overcomes the problem of preservation of cores, trench-cuts, or quarry exposures in unconsolidated sediments, and allows samples to be removed for study in the laboratory. This technique could be more widely used by museums for preservation and display of suitable sections. After all, where soft sediments are involved a museum display usually resorts to a photograph, which is a poor substitute for the real thing. Supplement this with a replica or 'peel' and one can at once convey colour, texture, and scale, whether it be a soil profile, archaeological section, fossil ice-wedge cast, or what ever. It will certainly make a more eye-catching and meaningful exhibit.

A number of different media have been employed, e.g. epoxy resin, polyester resin, latex, glue, and lacquer. These penetrate the sediment and harden it sufficiently to enable a superficial sample to be peeled away. The depth of penetration is dependent upon the coarseness of the sediment and the resulting peel has a texture which reflects the grain-size of the original, which is particularly useful for sedimentary structures. Described here is a technique using the natural latex emulsion sold as 'Copydex' which can be obtained by the gallon from hardware stores at modest cost. Such peels may be made single handed by any museum quite easily and cheaply. One drawback is that 'Copydex' ages and becomes brittle as it oxidizes, so those who wish their peels to have a longer life than say five years should employ one of the other more messy and expensive materials referred to in the bibliography. 'Copydex' will eventually be sold with an additive to prevent this oxidation and embrittlement.

MAKING A PEEL

Equipment required

'Copydex' (something like 2½ litres will make a peel 1m x 4m); spray gun (a simply cleaned type holding a litre or so, such as a Polyspray 2 by ASL Airflow, model number 4075); 2" paint brush (get the cheapest, it will be ruined); plasterer's cotton scrim (from builder's merchants); spade and trowel (for preparing the section); piece of hardboard (a little larger all round than the peel to be made); bottle of water (for cleaning up); scissors; an old kitchen knife; household ammonia (1 litre).

Choosing the section

The technique will not work on wet sediments, clays, or sediments with a high clay content. It works excellently on sands and gravels (even surprisingly coarse ones), dry soils, organic muds (gyttjas), and dry peat.

The chosen section should be cut with a spade until practically flat and leaning back a little from the vertical. It is then carefully cleaned up with a trowel, making specially sure there are no holes. Small stones are less of a problem; they should be loosened but left in situ and they will come away with the peel. A warm, dry day will greatly facilitate drying and speed up the whole process.

Application

The 'Copydex' should be diluted with a weak ammonia solution (household ammonia is good enough). 'Copydex' is inhibited from setting by the addition of ammonia; the addition of water alone would cause it to coagulate. The diluted 'Copydex' is then applied with the spray gun to lay down the first coat; spraying is necessary to avoid disturbing the soft sediment. Allow this to set (time depending on drying conditions), then apply a second coat if desired. When this too has dried, a liberal coat can be applied with a brush and allowed to set. Now strips of the plasterer's scrim are pasted to the peel using another liberal coat of 'Copydex'. The scrim provides a backing material which holds the peel together so it can be handled without tearing.

Removal

Leave the peel until dry (a day or so if necessary, but protect from rain). To remove the peel the hardboard is laid against the section and the top of the peel prised away with the kitchen knife. Separation should be made by the knife rather than by pulling the peel away from the section as this may leave something behind. As separation proceeds, the hardboard is bowed away from the section and the peel lays on it until the bottom is reached. Any stones which have failed to adhere can be replaced now. Small packets of representative sediment types should be collected for use back in the museum when faking up any tiny patches which have not taken properly. Do not despair if the peel looks thin and patchy with the white 'Copydex' grinning through, since this will largely disappear when the front surface cures properly. Remove to the museum and allow to dry on its board for a few days.

Then loose sediment can be shaken, brushed, or vacuumed off and there will be an immediate improvement in clarity and texture. At this point any 'improvements' you might wish can be made, e.g. artifacts protruding from the section, addition of fossils or shells which have not survived the process, etc. The peel is then stuck down to blockboard or chipboard with 'Copydex' for storage or display. A final protective coating of varnish (brushed on) discourages particles from dropping off and darkens the dry surface to more closely resemble the section in the field. I have used a diluted PVA emulsion which seems successful but others have used special varnishes, for instance a poly-methylmethacrylate with a thinner (see Baren and Bomer 1979).

DISPLAY AND STORAGE

Once adhered to a sheet of chipboard or similar the peel may be displayed vertically if desired. No special lighting is required, although a raking light will tend to emphasize the texture at the expense of subtleties of colour. If possible, avoid putting peels behind glass or a great deal of their detail will be masked. Mounted peels may be stored vertically, hung on a wall or suspended from racks etc.

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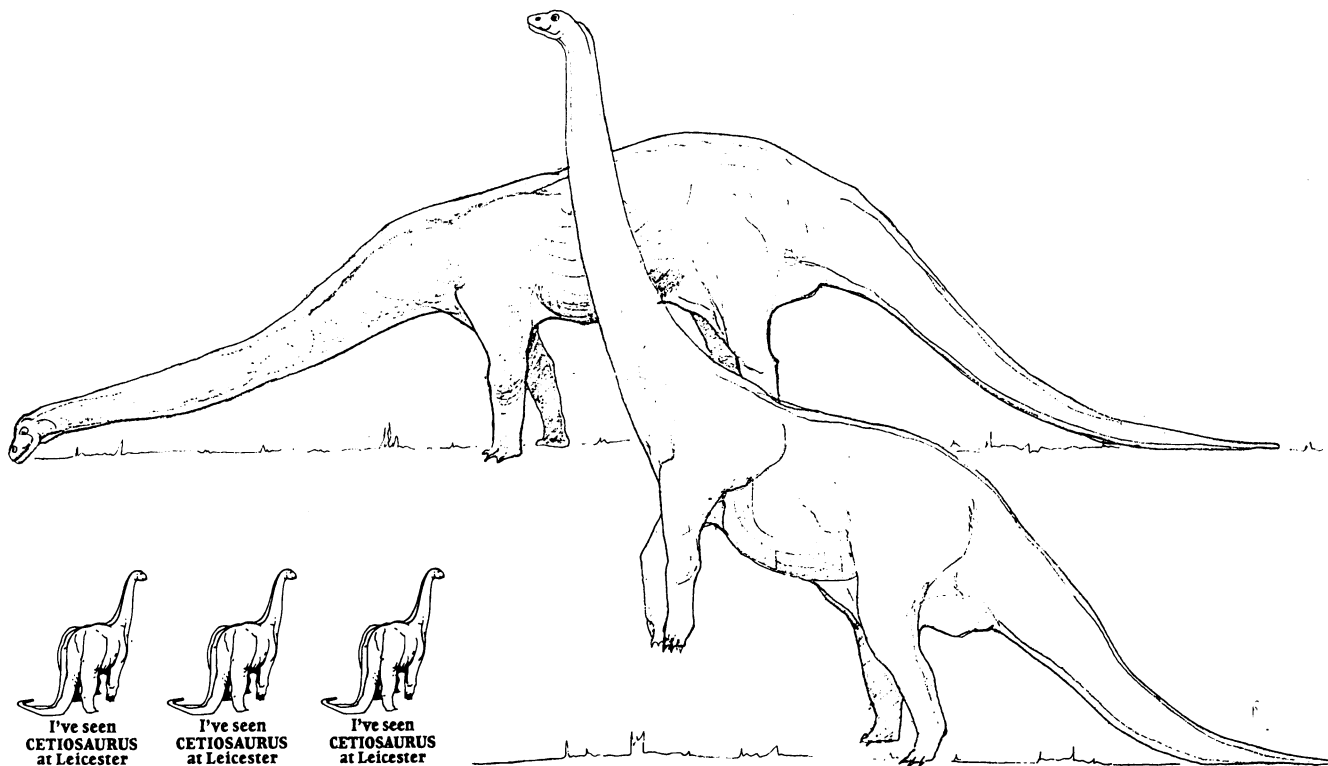
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I would be most interested to hear from anyone who has used the techniques described and can add comments, ideas, and innovations.

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A number of papers and books elaborate on the techniques of preparing peels using a variety of materials:

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Graphics by John Martin, from the 'What's a Dinosaur?' exhibition, opening 9 November 1985 at the Leicestershire Museum and Art Gallery, New Walk, Leicester. See 'Notes and News'.

NOW AND THEN

NEW SERIES ABOUT GEOLOGICAL SITES OF NOTE

BY ALAN C. HOWELL

INTRODUCTION

The idea for this series developed from an enquiry made some years ago by Ian Rolfe of the Hunterian Museum. He asked whether or not the unique source of Upper Carboniferous Arthropoda at Sparth Bottoms, Rochdale, would be a practical candidate for an NCC sponsored site clearance scheme. The bulk of the interesting fossil material was extracted from the site in the early years of this century but nothing was known (by Dr Rolfe or the writer) of Sparth's subsequent history.

A passing visit to the area generally known as Sparth indicated that very specific information regarding the actual fossil site would need to be traced. The area seen was a considerable area of wide flat-floored river valley, part of which was an active rubbish tip and part of which housed a sewage farm. All the accessible valley sides were covered in talus and vegetation; there were no rock exposures at all. A literature search to try and pinpoint the locality was obviously required but since the requisite references were not available in Bolton, the task remained 'pending' for some years. In 1981 Fiona MacKenzie, a natural historian, was appointed as Assistant Curator at Rochdale Museum and readily agreed to see if the literature at Rochdale was any help. Eventually an excellent series of contemporary site photographs was discovered in the local history collection of Rochdale Library (e.g. Figs. 1, 5). The fossiliferous horizons were indicated on the photographs which also showed a prominent local landmark in the shape of a gasometer (Fig. 1). When used in conjunction with a contemporary large scale Ordnance Survey map (Fig. 3), the exact location of the site became readily apparent and was in fact found to be some distance from the area of the earlier exploratory visit.

Being in a position to provide 'then' and 'now' photographs, together with an indication of the importance of the site and its current status, it seemed logical to publish the information for general consumption. Thinking further, it appeared that a series of articles dealing with similarly important sites could build up into a very useful information resource. This would of course add to the invaluable nature of the Geological Curator. It would also allow us to discharge some of our responsibilities towards sites, which understandably have received less coverage than curatorial and collection based topics.

Sparth Bottoms is therefore offered as the first subject for this projected new series. It is not intended as a strict format example

for future articles, but rather as a pre-production prototype which might need modification. Perhaps a more structured layout in the form of notes might be preferable to the free text used here. Hopefully, however, other contributors will respond to the general idea, so that Sparth does not become the pilot for a series which never happened!

SPARTH BOTTOMS, ROCHDALE, LANCASHIRE (now GREATER MANCHESTER)

NGR SD888129

According to the bibliography given below, the first publication relating to material from the brickpit at Sparth Bottoms appeared in 1895, though the fossil tree it described had, in fact, been discovered by the previous year. Photographs of an in situ fossil tree (presumably the same) taken at Sparth on 22 September 1894 (Fig. 3) are held in Rochdale Library, along with several pictures of the brickpit and a Prestwichia taken rather later. The first arthropod find was published in 1902 and material was still being extracted at least until c.1910. Two fossiliferous horizons were present in the pit at approximately 90 and 130ft. above the Arley Mine'. (Tonks et al. 1931, p.77) (Figs. 1, 4). In modern terminology this puts the age of the Sparth strata as mid-Westphalian A, Upper Carboniferous.

Reference to the photographs of the site indicates that the terraced eastern face of the pit must have exceeded 100 feet in height, using the 40 feet difference between the indicated fossiliferous horizons as a scale. The gasometer visible in the photos is the largest one shown on the map. Looking at the site today (Fig. 2) it is incredible that the hole must have been so deep (well below the adjacent river level) as to take the roofs of the houses beyond Norman Road below the site line from the pit floor to the gasometer. Clearly the brickpit exhausted its workable area sometime (?fairly soon) after 1910 and was subsequently infilled. The site has only been landscaped to its present form very recently (1984-85); its appearance in the interim is unknown to the writer.

The answer to the query, 'could Sparth Bottoms be re-excavated as a source of fossils?' unfortunately has to be 'no'. Removal of the quarry infill would certainly expose the old faces, but lateral extension into the fossiliferous horizons would clearly undermine roads and property either along the strike or up the dip (which is slightly west of south). The southern boundary of the site is mapped as faulted along the line of Albion

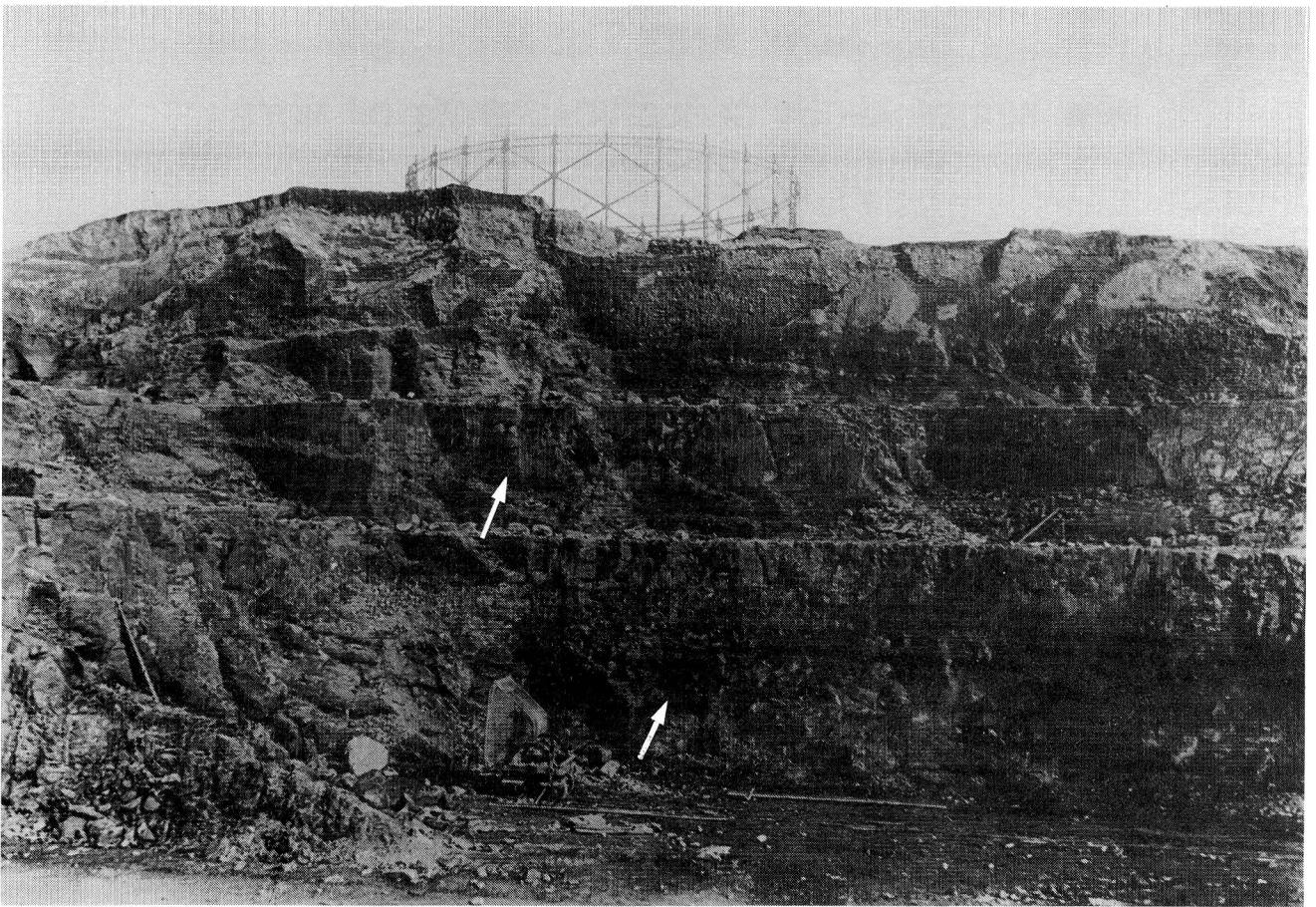


Fig.1. Sparth Bottoms brickpit, Rochdale, with the upper and lower fossiliferous horizon arrowed.



Fig.2. The site of Sparth Bottoms Brickpit, photographed 24 June 1985.

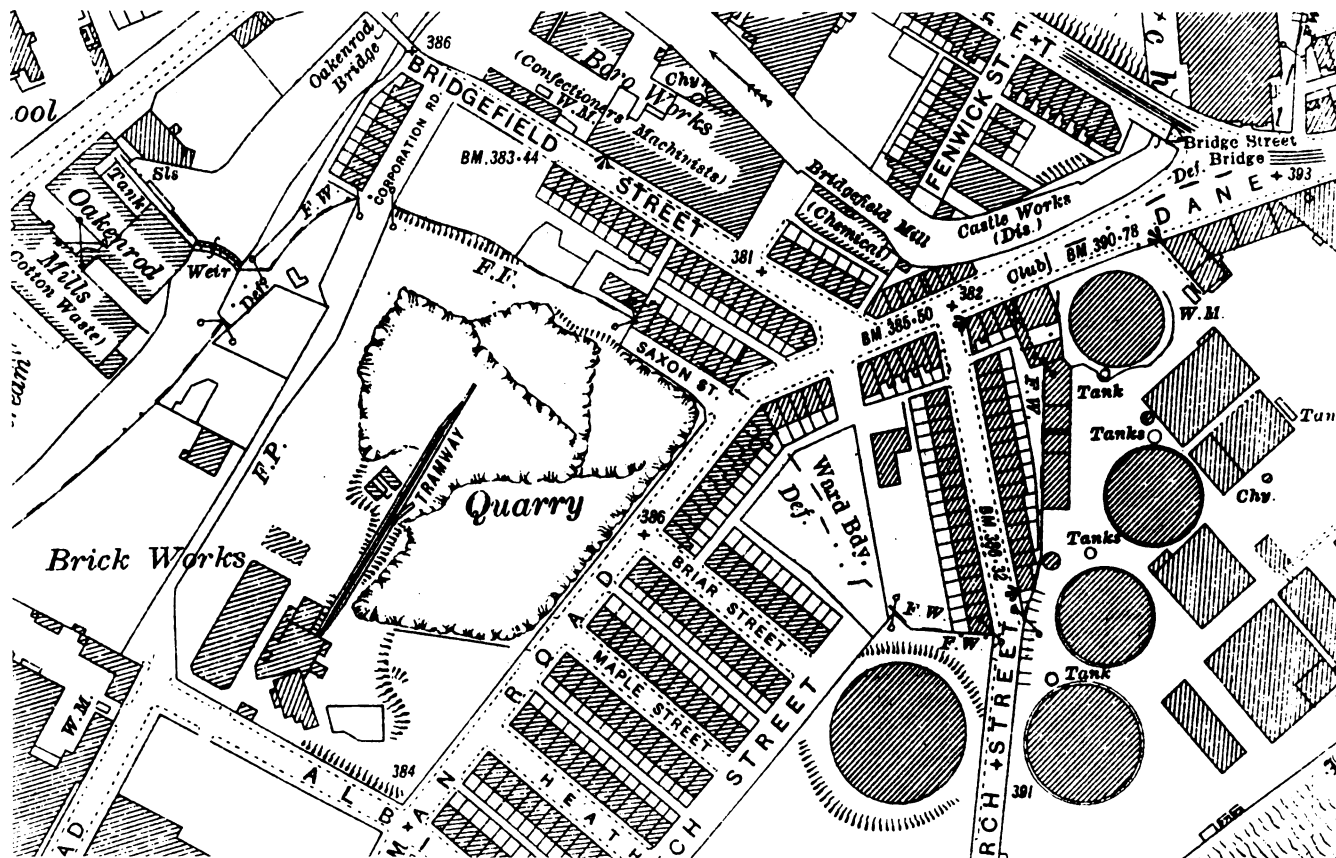


Fig. 3. The site of Sparth Bottoms brickpit, Rochdale. Reproduced from the 1930 1:2500 Sheet No. LXXXVIII.4 Ordnance Survey map.

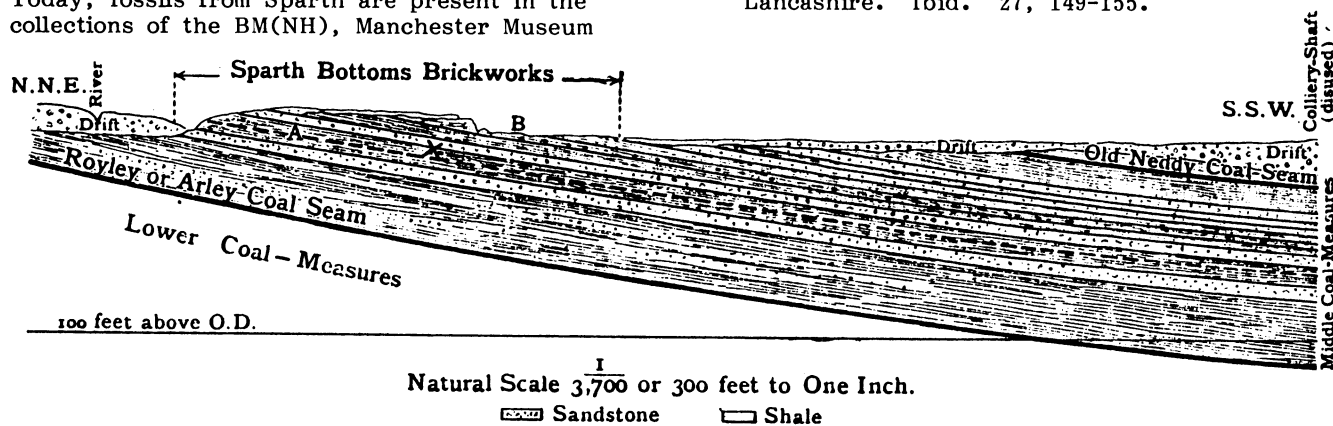
Road. Only an adjacent site, perhaps to the south (depending on the throw of the fault) could stand any real chance of providing a modern source of similar fossils. Consider also the number of presently surviving fossiliferous nodules from Sparth, in relation to the amount of brick-clay removed from the site. It then becomes obvious that such a small return could only have been obtained as the by-product of another economic activity. Even then the fossils were only recovered by the attentions, over a long period, of the amateur geologists who figure in the bibliography - no doubt with some help from their friends.

Today, fossils from Sparth are present in the collections of the BM(NH), Manchester Museum

and Rochdale Museum; Bolton Museum also has a few items obtained via W.A. Parker in 1907. The Sparth bibliography given below was extracted from Tonks et al. (1931); there are doubtless other references to Sparth material in later taxonomic literature.

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- B = Drab-coloured shale, with nodules containing *Prestwichia*, *Strepsodus sauroides*, ferns, *Calamariæ*, etc.
- A = Nodules containing *Carbonicola acuta*, *Belinurus*, *Euphoberia*, ferns, *Calamariæ*, etc.
- x = Position of nodule containing *Eoscorpium sparthensis*, sp. nov.

Fig.4. Section of the Coal Measures at Sparth Bottoms, from Baldwin and Sutcliffe (1904, fig.1).

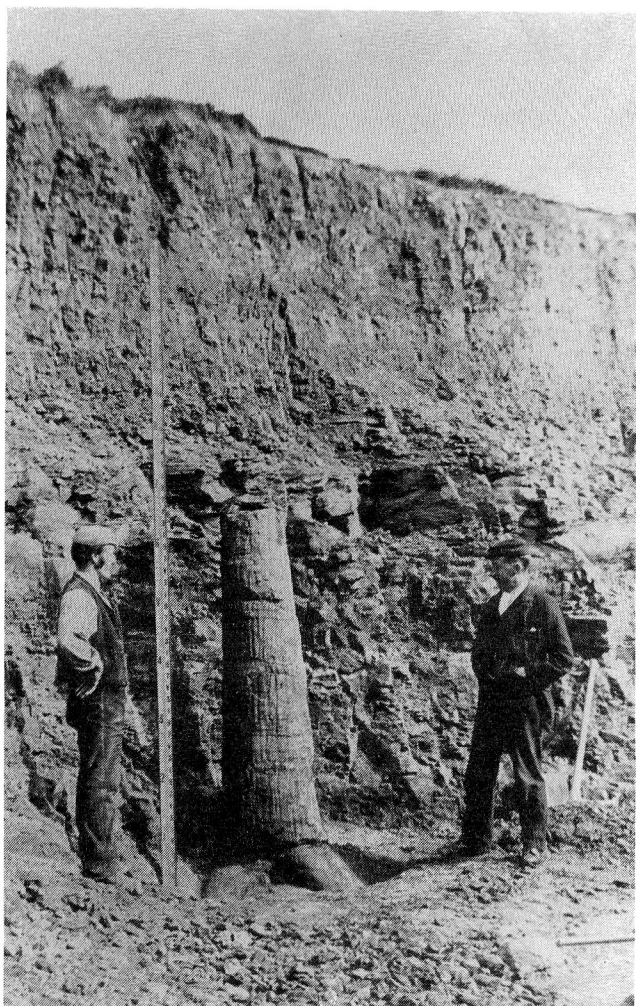


Fig.5. Fossil ?lycopod trunk, photographed in situ at Sparth, 22 September 1894.

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ACKNOWLEDGEMENT

Fiona Mackenzie has greatly assisted in the preparation of this article.

THE END OF A GEOLOGICAL ERA AT BRISTOL

BY SUSAN SWANSBOROUGH

Forty-four years of combined geological expertise will soon be lost at the City of Bristol Museum and Art Gallery as the Curator of Geology, Dr Michael L.K. Curtis and the Assistant Curator, Dr Michael D. Crane, are both to leave the museum world for pastures new. In the small world of museum geologists in Britain, the almost simultaneous loss of both senior staff in a major museum can only be compared to the extinction of the dinosaurs!

DR MICHAEL L.K. CURTIS FGS

Micky Curtis came to the City of Bristol Museum as Curator of Geology in December 1951 after completing his BSc and PhD at Bristol University. He was faced with the uphill task of rebuilding the collections, depleted by the loss of an estimated 17,000 specimens through enemy bombing on the night of 24/25 November 1940. Thousands of specimens were collected from the local area, particularly from temporary exposures such as motorway cuttings and pipe trenches. He tackled the work single-handed for the first fifteen years, but was assisted in later years, mainly by Tom Fry, a renowned local collector and part-time geologist at the museum.

Micky is a curator in the true sense of the word; through his work, the collections at Bristol are once again amongst the finest in Britain, with enviable storage and standards of curation and documentation. Much of the museum's international reputation rests on the excellence of its geology collections.

During thirty-four years of service to geology at Bristol Museum, Micky has seen and orchestrated great changes. It is a great personal compliment that he persevered at the rather unglamorous work of rebuilding the collections and making proper provision for their housing, especially when he would have preferred, like many curators, to place emphasis on the more interpretive aspects of museum work. It was always his belief that without this provision the collections could not be used to their best advantage. Through these efforts his successor will find a very firm base on which to build.

Micky is foremost a stratigraphical palaeontologist with particular interest in the Lower Palaeozoic. The collections reflect both his interest and the richness of the Bristol district; the palaeontology of the Palaeozoic and Jurassic is particularly well represented.

From the outset Micky recognised the importance of maintaining a good library and, through careful management of sometimes scant resources, he has maintained runs of journals and high standards of book-binding and repair.

In 1976 he oversaw the complete transform-

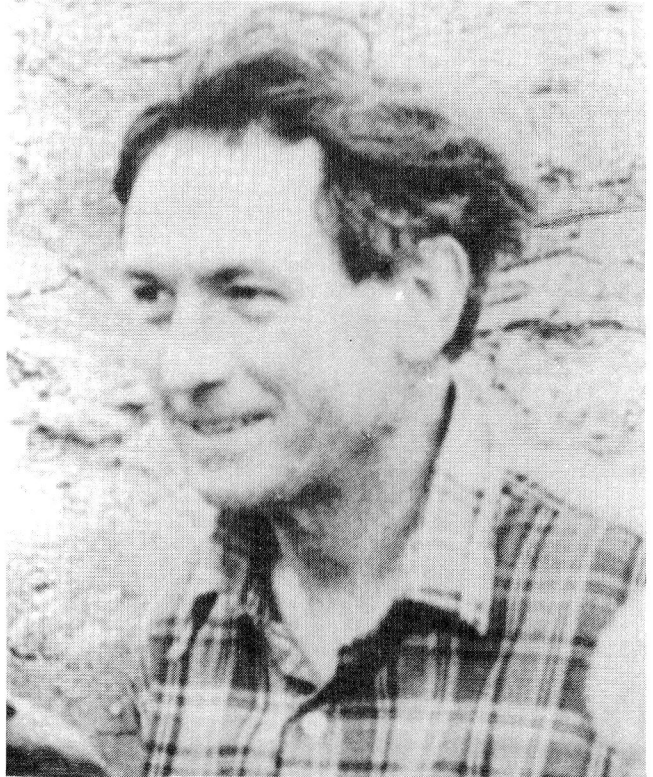


Fig.1. Dr Michael L.K. Curtis FGS.

ation of the Geology displays; hopefully the new Mineral Gallery will have been completed in time for his leaving early in the new year.

Two fossils have been named after him, the brachiopod *Eocoelia curtisi* Zeigler, 1966 (see Zeigler, A.M. 1966. *Palaeontology*, 9, 537-538) and the trilobite *Crassiproetus curtisi* Owens, 1973 (see Owens, R.M. 1973. British Ordovician and Silurian Proetidae, p.38. *Palaeontogr. Soc. Monogr.* 98pp, 15 pls).

Early retirement will mean that Micky no longer has to travel into Bristol each day by bus the many miles from his home in Berkeley in Gloucestershire. He will be able to enjoy his new-found freedom in his large garden after a distinguished career. We wish him well for the years to come.

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DR MICHAEL D. CRANE FLS

After completing his doctoral research in palynology at the University of Sheffield, Mike became Research Assistant to Prof. W.G. Chaloner at Birkbeck College (1972-1973) and then an Assistant Curator at Portsmouth Museum (1973-1975). He came to Bristol as Assistant Curator of Geology in 1975. While at Portsmouth Mike had developed an interest in Tertiary palaeontology, an interest he maintained when he moved to Bristol. However, his main work has been in the documentation of the collections, their history and the work of the many people associated with them.

His expertise is not only confined to the origins and associations of the geology collections; his knowledge of the history of the museum is probably unrivalled and his skill as an archivist has added much to the central museum historical files. It comes as no surprise, therefore, that he is presently preparing a popular illustrated history of the City of Bristol Museum and Art Gallery.

It is for family reasons that Mike has decided to leave the museum in October. However, he is going with the hope that, in the long term, he will be able to write the articles and books that he has previously

only had time to dream about. To lose Mike from the profession is a sadness but we wish him luck in his new venture.

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GEOLOGICAL CONSERVATION AND THE NATURE CONSERVANCY COUNCIL

BY GEORGE BLACK

1. INTRODUCTION

Geology is fundamentally a field science, dependent on the ability to collect specimens and data from the crust of the Earth. Rock outcrops, natural or artificial, are the most important source of these basic requirements, but their continued existence is increasingly under threat. For geology to progress, the long-term survival of at least the most significant exposures must somehow be guaranteed.

All British governments have accepted this need for geological conservation since 1949. Accordingly their official conservation agency - originally the Nature Conservancy (1949-65), then the Nature Conservancy committee of NERC (1965-73), and now, since 1973, the Nature Conservancy Council - has been given statutory powers and financial resources so that it can conserve those localities needed by the geological community. The official conservation agency, however, has also always had other, biological, responsibilities, and has therefore had to seek a proper balance between the competing needs of geological and biological conservation when devising its policies and allocating its resources.

Recently there has been a growing concern among geologists that geological conservation is neither accorded sufficient status nor allocated a fair share of resources within the Nature Conservancy Council. This inferior status accorded to geology lies behind the sequence of events chronicled in Vol. 14, No. 4 of the Geological Society Newsletter and in Vol. 4, No. 3 of the Geological Curator. The present paper confines its attention to NCC's present policies and their consequences for geological conservation.

2. POLICY

The statutory basis of NCC policy derives principally, but not entirely, from the Wildlife and Countryside Act, 1981, and the subsequent amending legislation. The way in which this policy is to be implemented is set forth at length in Nature Conservation in Great Britain (1984).

The Wildlife and Countryside Act is an attempt to enable biological conservation to influence and control a number of operations, carried out largely in the course of farming and forestry, which are exempt from the control through Planning Law provided by the National Parks and Access to the Countryside Act, 1949. The new Act greatly expands the NCC's powers, especially by enabling it to prohibit any activity it might care to

specify on a conserved site, subject only to the payment of compensation for any loss of profit which might result. Further, the Act stipulates that, for every site, the Conservancy must provide a list of 'Potentially Damaging Operations' (PDO's), defining those which cannot be carried out without permission.

This legislation, designed to meet the needs of the biologists, is far from being of benefit to geological conservation, which continues to operate very much as before through the Planning Law and consensus. For most geological sites, the provision of a list of PDO's is not only an unnecessary waste of time (and a diversion of already inadequate resources), but is known to stimulate hostility among the owners and occupiers of geological SSSIs - the very persons whose much needed sympathy and co-operation have long been cultivated by NCC's geologists. The interests of geology would be much better served if the clause which makes it mandatory for NCC to serve all owners and occupiers with a list of allegedly potentially damaging operations were to be amended so that such a list was served at NCC's discretion. This point, however, was not pressed when the Act was amended earlier this year.

A second serious threat to geological fieldwork is posed by the manner in which NCC is currently implementing the Act. In the list of Potentially Damaging Operations, one - No. 27 - is concerned with preventing damage to scientific interest by visitors to SSSIs. There seem to be a number of variations; for instance, in the papers served on one site owner, PDO No. 27 makes it an offence for the owners and occupiers of this biological SSSI, which is also used for geological fieldwork, to permit 'Recreational, research, educational or other activities likely to damage botanical or zoological interest'. In the papers served on another, PDO No. 27 makes it an offence to permit 'Recreational or other activities likely to damage the flora and fauna'. I suspect that, in practice, PDO No. 27 might well prove to have been widely applied to many SSSIs, both biological and geological, in a form which owners can interpret as prohibiting geological fieldwork. If so, geological fieldwork could well be prohibited over 10% of Britain - the proportion of the country that NCC's new policy intends to notify as SSSIs - the figure rising to 20% or even more in the uplands, where the biggest biological SSSIs and the favoured geological fieldwork areas are concentrated. Owners and occupiers who ignore the provisions of PDO No. 27 and give a geological party, or even a single geologist, permission to carry out fieldwork are now

liable to be treated as criminals and fined up to £1,000 for each offence.

Another PDO - No.25 - prohibits the removal of all types of geological specimens, whether rocks, minerals or fossils. Rarely, circumstances can be envisaged where it would be essential to apply such a prohibition to ensure the proper use of a very scarce scientific resource, such as a fossiliferous cave earth, but the application of this PDO to the overwhelming majority of geological SSSIs would be highly inappropriate. After all, the prime function of geological conservation is to ensure the survival of important outcrops so that they can be used by geologists! I am certain that NCC geologists are fully aware of the need to apply PDO No.25 only in the most exceptional circumstances. However, it is essential that equal discretion be shown by the junior regional staff who, following receipt of their geological colleagues' recommendations, actually draw up the site notification papers and serve them on the landowners and occupiers. I am concerned that geologists might well be prevented from making proper use of some of the SSSIs specifically conserved for their benefit through an over-enthusiastic application of PDO No.25.

Exemptions from the provisions of any PDO, known as 'Letters of Consent', can be granted by NCC to owners and occupiers. However, the evidence so far to hand suggests that these stipulate that owners and occupiers can only grant permission for education and research fieldwork to persons who have already sought and obtained a written NCC permit.

The manner in which NCC is currently implementing the Wildlife and Countryside Act will have a far-reaching and adverse impact on all types of geological fieldwork. SSSI owners and occupiers, whose sympathies geologists have long cultivated, are being alienated by the much greater restrictions (of little relevance to the true needs of geological conservation) imposed by the new system of site notification. Since the granting of consent for fieldwork on a biological, or even on a geological, SSSI, subject to PDO No.27, can render the owner and the occupier liable to criminal prosecution and to heavy fines, there will develop a natural predisposition to refuse, as a matter of course, all requests for access to such areas unless the applicant carries a written permit from NCC. But, since SSSI boundaries are in practice unknown to almost all intending visitors, the exemption system can provide no real relief - party leaders and research workers will be unaware that they need to apply to NCC's regional staff for the written permits before they can even approach the owners and occupiers of the sites they intend to visit. The adverse effects of the unfair contracts, occupier's liability and safety legislation on geological fieldwork linger on but seem likely to be dwarfed in the future by those of the Wildlife and Countryside Act.

There are further equally damaging, but perhaps less obvious, consequences for

geological conservation, which stem from NCC's policy statement Nature Conservation in Great Britain (June 1984). The new policy advocates the use of NCC's statutory powers in a more aggressive and uncompromising way than was hitherto customary; conservation is seen as an end in itself, and not as a service provided to scientists or any other section of the community. My fears in this direction have already been reported in the Geological Curator, Vol.4, No.3, and since their original statement, I have found much to add to my concern, as the cases referred to below will show.

Public reaction to NCC's new policy has been most forcibly expressed in the remoter communities, where NCC intends that a large proportion of the land should be conserved; as SSSI after SSSI is announced, the local people become progressively more fearful for their future prospects in the face of the mounting restrictions on the use they can make of their own land. They are aware that these restrictions are being imposed for the benefit of outsiders - whether scientists or tourists is immaterial - and that these outsiders, in contrast to themselves, will not suffer from any resulting 'conservation blight'. Compensation payments are no solution as these are made only to landowners and occupiers. For instance, when NCC paid almost £500,000 to one landowner for not planting trees on a bog, the people who would have been employed planting those trees, and who are now presumably in the dole queue, got nothing. Similarly, the provisions for the establishment of Marine Nature Reserves do not include the payment of compensation to any fishermen who might lose their traditional fishing grounds.

It is not surprising, therefore, that the implementation of NCC's current policies is alienating whole communities to conservation and to the establishment of any SSSIs, whether biological or geological. It is less certain how adverse the effects may be on the welcome given to visiting geologists, as distinct from conservationists, but I have already heard the view expressed by the factor of a large and geologically significant estate that he was becoming more and more reluctant to allow any scientific work on his ground, for 'where the scientists go, the restrictions will follow'. If this view becomes general, its implications for geological fieldwork hardly need to be spelt out.

Moreover, harm is being done to geology and to geological conservation by the activities of parts of the biologically-dominated environmental lobby, which seem happy just to create as much publicity as possible. Geology, however, is best served by a low public profile. Experience shows that we can achieve better results with our site owners through quiet discussions than we could through highly publicised confrontations. There would be little to gain, and much to lose, from any of our better-known geologists lying down in front of a bulldozer!

On the other hand, it must be realised that

we are not exempt from the consequences of the activities of the more extreme members of the biological lobby. An example has been provided by the recent, much-publicised reception accorded to Dr David Bellamy and to Jonathan Porritt (Director of the Friends of the Earth) by the people of Islay, which followed similar 'non-welcomes' to conservationists in Orkney and the Outer Hebrides. From my direct involvement, this case can provide a text-book example of the manner in which biologists, both within and outside NCC, are attempting to implement current conservation policy with total disregard for the consequences their actions might have for geology.

Planning permission was sought in 1983 to extract peat (essential for Islay's staple industry of distilling) from part of a large bog; the area involved had already been drained and, elsewhere, the bog supported a number of active domestic and commercial peat banks. The proposal was approved by the Argyll and Bute Planning Committee and District Council, in both cases unanimously. NCC's response, however, was to notify the whole area (including the existing workings) as a high-grade SSSI, justifying their action by in my opinion some very unconvincing scientific evidence; it then proceeded to oppose the proposed development, alleging among other things that the bog was undisturbed! A public inquiry resulted and, late in 1984, the Secretary of State rejected the conservation case and granted permission for the winning of peat. However, when work started this summer, Dr Bellamy and the Friends of the Earth refused to accept the Secretary of State's decision and launched a campaign for its overturn. This included the customary prone protests on the site, which were countered by demonstrations by the Islay people, and culminated in a public meeting in Bowmore, organised by the Friends of the Earth and to be addressed by Dr Bellamy. This meeting was attended by 25% of the island's population, including their District Councillors, and its outcome can only be interpreted as an overwhelming rejection of conservation.

The actions taken, firstly by NCC, and later by Dr Bellamy and the Friends of the Earth, have thus done harm to conservation on Islay and beyond; in practice, it may now be unrealistic to expect the notification of any more SSSIs in and around Islay in the face of the hostility of the local people and of their elected representatives - and I understand that the geological sites in this area, identified and assessed by the GCR, have not yet been notified. Biologists, with apparent indifference, have by their actions seriously threatened the conservation of all geological localities of GCR standard in Islay, and probably in the neighbouring islands as well. Geologists may well ask why the NCC, with its dual statutory responsibility to conserve geology as well as biology, did not realise the damage Dr Bellamy and Mr Porritt were likely to cause by their actions, and take the strongest measures to prevent it? Let us hope for geology's sake that similar public reactions

are not provoked by the environmental lobby elsewhere.

3. CONCLUSION

The present policies of the Nature Conservancy Council are at odds with the needs of geology and the present manner of their implementation poses a threat to the field basis of the science. Moreover, there is considerable evidence accruing to show that they are not acceptable to an increasing proportion of the population.

In these circumstances, the NCC should in future ensure that the scientific value of every site they seek to conserve is established beyond all reasonable doubt; that they are able to guarantee (as is their stated intention) to conserve this interest effectively for all time; and that they do everything possible to minimise the social cost of conservation to the local community.

NCC must also ensure that whatever policy they adopt caters equally for the needs of all the sciences for which they are statutorily responsible. It is unrealistic to hope that the necessary recasting of national conservation policy on some basis other than that developed from the National Parks and Access to the Countryside Act by its descendant, the Wildlife and Countryside Act, can be achieved in the foreseeable future. The development of the necessary new initiative must take time. There are, however, a number of more immediate aims that I suggest might more quickly be realised.

Firstly, that part of the Wildlife and Countryside Act which obliges the NCC to issue all site owners and occupiers with lists of specified Potentially Damaging Operations (Section 29(4)b et seq) should be amended so that such lists are issued for geological sites only where they serve a useful purpose.

Secondly, the NCC should list all SSSIs which are subject to PDO No.27 worded in a way that could be interpreted as a prohibition of geological fieldwork. Similar information in which sites are subject to PDO No.25 should be collected at the same time. A working party should be set up to consider those cases where the imposition of these PDOs is detrimental to the interest of geological fieldwork.

Thirdly, the NCC should complete notification of those sites already selected by the Geological Conservation Review as speedily as possible, wherever local popular opinion permits. This would prevent losses, not only as a consequence of any further misjudgements similar to those made recently in Islay, but would go some way to prevent the recurrence of cases similar to Doe Lea.

Fourthly, the NCC should instruct its staff, before carrying out any biological casework, to consider the implications their actions might have for geological conservation. Likewise, since NCC is the only body which has acceded to the joint policy statement

Nature Conservation in Great Britain, which has statutory responsibilities for geology, it should act as a restraining influence on its biological allies, whenever their actions could harm geological interests.

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Finally, the representations already made by the Geological Society and by the Institution of Geologists to the NCC, concerning the need for a greater geological influence on the making of policy and on its implementation, should be maintained.

THE NATIONAL SCHEME FOR GEOLOGICAL SITE DOCUMENTATION

BY MICHAEL F. STANLEY

MSC SCHEMES

The Manpower Services Commission, through its Community Programme, is continuing to be used by many museums for the documentation of collections. However, few Record Centres appear to be employing this form of temporary staffing. In the early days of the National Scheme many centres solicited help through JCP and its successor STEP. Perhaps it is time for Record Centres once again to promote recording schemes. I was asked by the Conservation Committee of the Geological Society to suggest an outline scheme which Record Centres could use as a model for submission. Below is my suggested format which is emotively titled Heritage Recording as this much overused and fashionable word has community connotations.

The majority of application forms require financial details of the proposed scheme, including equipment, travel costs and consumables. These are obviously dependent on the number of staff, defined area of recording, current state of recording and availability of facilities within the host institution. My experience of MSC schemes suggests that it is essential to build into the scheme a secretarial post or two to transfer data to cards or terminals.

Finally, I cannot guarantee that Record Centres will be granted a scheme but I am sure it is well worth trying for one!

OUTLINE SUBMISSION TO MSC

Heritage recording

The natural and man-made heritage is fast disappearing, especially that relating to land surface features and their underlying geological structure. This scheme is designed to retrieve information on that heritage for posterity and to make it available independently for use by National and local authorities, institutions, groups and individual members of the public.

Data gathering

A team will undertake a survey of the sites in - [area] - including abandoned and working quarries, pits and mines, natural exposures, geomorphological features, boreholes, road cuttings and temporary exposures of pipeline trenches and other excavations.

This will be achieved by literature searching from geological maps and their associated memoirs, Ordnance Survey maps, scientific publications, from all of which an assessment can be made of the priorities for further fieldwork.

Where possible the team will build on information already held in the Geological Locality Record Centre or, where one has not been designated, provide the impetus and data to create a GLRC. (This is obviously dependent on the local situation.)

The data collected will be recorded by nationally agreed standards and methods on to MDA A4 Summary Record sheets for (either) manual or computer filing and retrieval.

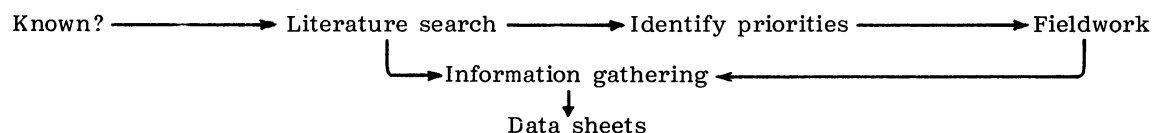
Staff

The team will be based at - [GLRC or other] - and will comprise - [number] - members (dependent on County area and its exposure availability), one of whom will be supervisor on a day to day basis. Overall supervision will be the responsibility of the sponsor and the GLRC staff. The team should ideally be graduate geologists with some experience in - [specialist area] - geology (dependent on geological basis i.e. geological period experience etc.) and should include - [number] - clerk/typists to transfer data from recording field slips to cards or computer terminal.

Data use

The independent source of the data gathered will be available for use by:-

- a) teachers, lecturers and students, and to provide an advisory service on the educational potential of sites, site access and main features of interest (with later feedback concerning educational use and suitability).
- b) planning departments for the production of mineral assessment, waste disposal, reclamation, recreation, structure and local plans, and for public enquiries.
- c) the Nature Conservancy Council to provide data on alternative sites and to update information on the condition and threats to heavily used SSSIs or other vulnerable sites.
- d) individuals and voluntary groups for bone fide research and appeals against plans and enquiries.
- e) county conservation trusts for the conservation potential and management of sites.



FIELDWORK IN NATIONAL PARKS

Dr Eric Robinson, after a recent Geol. Soc. Conservation Committee meeting, discussed the problems of access to National Parks by geological parties. He has published a list of Youth and Schools Liaison Officers for the Parks in the Geologists' Association Circular (January 1985), these being the people to contact regarding problem areas (e.g. difficult farmers), and to discover which landowners to approach for permission to visit particular sites. Most, if not all, officers will know their patches well and should be able to direct visitors to new or improved localities. It is pertinent to reproduce the list in the Geological Curator not only for Record Centre staff but for the membership in general.

Those Record Centre staff whose areas include National Parks could probably solicit field recorders or new records by personal contact and perhaps even generate enough interest for Park Officers to initiate Record Centres or Recording Units.

Brecon Beacons. Ms. R. White, Assistant Information Officer, Brecon Beacons National Park, 7 Glamorgan Street, Brecon, Powys LD3 7DP (Tel. 0874 4437).

Dartmoor. Mr T. Gant, Y. & S. Liaison Officer, Dartmoor National Park, Parke, Haytor Road, Bovey Tracey, Devon TQ13 9JQ (Tel. 0626 832093).

Michael F. Stanley
Derbyshire Museums Service
John Turner House, Parkway
Darley Dale, Matlock
Derbyshire DE4 2FW

Typescript received 19 August 1985

Exmoor. Mr F.B. Pearce, Assistant Visitor Services Officer, Exmoor National Park, Exmoor House, Dulverton, Somerset (Tel. 0398 23665).

Lake District. Mr S. Drinkwater and Mr G. Wilson, Y. & S. Liaison Officer, Lake District National Park, Brockhole, Windermere, Cumbria LA23 1LJ (Tel. 09662 3467). (Brockhole is a Geological Locality Record Centre.)

North Yorkshire Moors. Dr R. Gulliver, The Moors Centre, Danby, Whitby, North Yorkshire YO21 2NB (Tel. 0278 60540).

Northumberland. Mr A.J. Hopkins, Y. & S. Liaison Officer, Northumberland National Park, Eastburn, South Park, Hexham, Northumberland NE46 1BS (Tel. 0434 605555).

Peak Park. Ms. Betsy King, Y. & S. Liaison Officer, Peak District National Park, Losehill Hall Study Centre, Castleton, Sheffield S30 2WB (Tel. 0433 20373).

Pembrokeshire Coast. Mr David Pratt, Field Services Officer, Pembrokeshire Coast National Park, County Offices, Haverfordwest, Dyfed SA61 1QZ (Tel. 0437 4591 ext.5132).

Snowdonia. Mr Hugh Roberts, Y. & S. Liaison Officer, Snowdonia National Park, Penrhyndeudraeth, Gwnedd LL48 6LS (Tel. 0766 770274).

Yorkshire Dales. Mr Timothy Haley, Centres Supervisor, Yorkshire Dales National Park, Colvend, Hebdon Road, Grassington, Skipton, North Yorkshire BD23 5LB (Tel. 0756 752748).

LOST AND FOUND

COMPILED BY MICHAEL D. CRANE AND HUGH S. TORRENS

Abbreviations

- BRIDSON et al. - Bridson, G.D.R., Phillips, V.C. and Harvey, A.P. 1980. Natural history manuscript resources in the British Isles. Mansell Publishing Company, London; Bowker, New York.
- CLEEVELY - Cleevly, R.J. 1983. World palaeontological collections. British Museum (Natural History) and Mansell Publishing Company, London.
- DESMOND - Desmond, R. 1977. Dictionary of British and Irish botanists and horticulturalists. Taylor and Francis, London.
- GCG - Newsletter of the Geological Curators' Group, continued as The Geological Curator.

120 Specimens from the BEAGLE voyages

- GCG 3(2&3), 162
GCG 4(3), 175

Dr Gordon Chancellor (City of Peterborough Museum and Art Gallery) writes:

'A great deal of work has been done in recent years by David Stanbury (GCG, 3(2&3), 162) and other Beagle experts in tracking down collections made during the famous voyage of 1831-1836. Much relevant information can be extracted from the first volume (already out) and the second volume (forthcoming) of the Darwin Correspondence, while the fate of all Darwin's collections is summarised by Duncan Porter in his chapter in The Darwinian Heritage (also forthcoming). In addition, papers by Smith and by Chancellor et al. dealing with aspects of Darwin's collections will appear in the BM(NH) Historical Series in 1986.

I have been researching the geological work of Charles Darwin for a number of years in connection with my transcription for publication of his Beagle notebooks. I hope to submit this work to Cambridge University Press in not too many years' time, but in the meanwhile I would be more than happy to provide what information I can that is not already given by the above authors and by Cleevly.'

152 Museum of Haslar Hospital, Gosport

- GCG 4(3), 177

A brief note in The Magazine of Natural History, (1828) 1, 191, describes the Museum as occupying the upper of two rooms 'lately erected' by 'the commissioners of His Majesty's victualling department'. The writer comments 'It already contains many curious specimens in morbid anatomy, and a considerable number of foreign birds,

insects, shells, minerals, plants, &c. principally presented by the medical officers of His Majesty's navy'.

H.S.T.

Mrs P.M. Vergo (Department of Palaeontology, Portsmouth Polytechnic) writes that in 1941 the Haslar collections included some 16,000 geological specimens collected by naval personnel. Unfortunately the Museum received a direct hit during war-time bombing. Specimens were recovered over a period of months, but only some two dozen or so remain at Haslar, and these are mainly anatomical preparations.

154 John Francis CAMPBELL (1821-1885)

Dr Mike Taylor (Area Museum Council for the South West, c/o City of Bristol Museum and Art Gallery) has drawn attention to an article by Frank Thompson in The Weekend Scotsman (a Saturday supplement to The Scotsman), 16 February 1985, p.1, on Campbell.

John Francis Campbell was born in Edinburgh in December 1821, and brought up on Islay. He was educated privately and then at Eton before entering the University of Edinburgh. There, to quote The Weekend Scotsman, 'his intentions to study law were sidetracked by his intense interest in natural science. He studied geology and, in particular, the new science of photography. He was to develop those interests to the extent that in later life he travelled the world to study land forms and the effects of glaciers'. His name is commemorated by that of the Campbell - Stokes sunshine recorder. Campbell is remembered primarily for his immensely valuable work in collecting Gaelic folktales. The Weekend Scotsman records his life as 'full of action, with a massive amount of work done in the fields of popular science, geology, meteorology and Gaelic traditions'. He died at Cannes, 17 February 1885, where he is buried.

Most of Campbell's manuscripts are housed in the National Library of Scotland, and an exhibition to commemorate the centenary of his death is to be mounted later this year. It would be interesting to know if Campbell made any collections of geological material and, if so, what happened to them.

155 Upper Liassic crocodiles from the Charles Moore collection

Ron Pickford (Geology Museum, Queen Square, Bath BA1 2HP) writes:

'In his article on the Upper Liassic crocodiles from the Moore collection Chris



Fig.1. Plesiosaur femur (see 156).

Duffin published a lithograph and two pencil sketches of specimens presumed to be missing from the collection. The specimen consisting of the head and partial postcranial skeleton (Duffin 1979, Pl.4, fig.B) had never been 'missing' but was, at the time, on loan to the National Museum of Wales, hence the oversight. This specimen (M 1414) has since been returned to the Bath Geology Museum.

The drawing of 'a very strange specimen' (Pl.4, fig.A), probably a hind limb, corresponds to a specimen at Wisbech Museum, as pointed out by Monica Price. The specimen figured with M 1418 (Pl.3) remains unaccounted for.'

Duffin, C.J. 1979. The Moore collection of Upper Liassic crocodiles: a history. GCG, 2(5), 235-252.

156 A well-travelled plesiosaur femur (Fig.1)

Robert Jones (Collection Manager (Palaeontology), Australian Museum, 6-8 College Street, Sydney South, New South Wales 2000) writes:

'Recently an intriguing specimen was brought to The Australian Museum by a member of the public who had been a tourist in Britain. The specimen did not prove hard to identify, it is the femur of a plesiosaur 240mm long, but the intriguing thing was where it was found and how it got there. It was found by the tourist adjacent to the shores of Loch Ness in Scotland. It was lying on a rock in bushes a few miles north of Castle Urquhart. This conjures up visions of the evening tabloids splashing headlines all over the place claiming the discovery of evidence proving 'Nessie' is a plesiosaur. But I must hasten to add that the bone is a fossil and heavily permineralised: obviously not from any post Mesozoic 'Nessie'. The specimen is reasonably clear of matrix, a small amount of blue-grey clay is evident on both ends and it has a grubby appearance from apparent frequent handling. We suspect it probably comes from the Oxford Clay around Peterborough in Cambridgeshire but we cannot prove this.

As to how it got to Loch Ness, we must presume someone put it there. But for what reason? Did someone discard it because it was 'hot' or was it a badly planned hoax? I hope someone in Britain might be able to tell us more about it and for this reason I am including a photo which may help with identification. It does not have any sign of a collection number but I suspect it may have been in a collection of some sort. If anyone can throw any light on the mystery we would very much like to hear from them.'

157 Mr and Mrs C.G. DANFORD (fl.1870s-1890s)

In GCG, 4(1), 26 there was a reference to a C.G. Danford (d.1928) of Reighton Hall, and later of Folkestone. T. Sheppard, writing in 1928, described him as 'a keen naturalist and sportsman, and a great traveller'. He added that Danford was at one period 'interested in vineyards in Hungary' and that 'he collected a wealth of folklore and other information relating to Central Europe'. Sheppard also refers to Danford's interest in geology and zoology - he apparently made collections of mammals which were presented to the British Museum.

Is this Danford related to the Mr and Mrs C.G. Danford who were the dedicatees of George Maw's A monograph of the genus Crocus, (London, 1886)? They travelled extensively in Asia Minor in the 1870s, during which time Mrs Danford made important collections of plants. Specimens were sent to J.G. Baker at the Royal Botanic Gardens, Kew, and to George Maw. Two species were named in her honour, Iris danfordiae J.G. Baker and Crocus danfordiae Maw.

Sketches by this Mr Danford were the basis of topographical vignettes in Maw's Monograph. Mr Danford was British Consul in Transylvania, Roumania, in 1890. He was a skilled ornithologist and was presumably the Charles George Danford who translated Gesammelte ornithologische und jagliche Skizzen [Notes on sport and ornithology] by

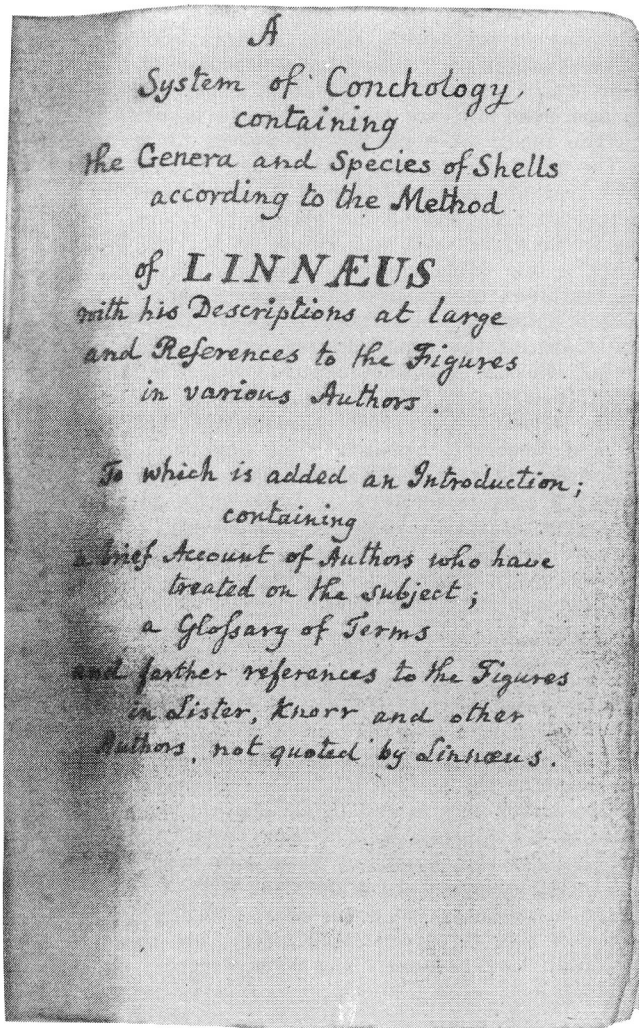


Fig.2. Pulteney? manuscript, title page (see 159).

Rudolf, Crown Prince of Austria, published 1889.

I would be grateful for any information on the dedicatees of Maw's Monograph.

Sheppard, T. 1928. In memoriam. C.G. Danford. Naturalist, Hull, 1928, 156

M.D.C.

H.S.T. has drawn attention to the following obituary of Charles George Danford (1843-1928) taken from Ibis, 1928, 539-540:

'The death of Mr C.G. Danford, which took place at his home at Neufchatel, in the Department of Pas-de-Calais, France, on 27 February last, removes one who was well known to some of our older members as a fine field naturalist and sportsman. He was a member of the Union from 1874 to 1899, when he resigned.

Danford was born at Port Louis, in Mauritius, on 24 April 1843, so that he was nearly 85 when he died. His father was William Danford and his mother Henrietta Brownrigg. He was educated at Merchison College, and was subsequently at Trinity College, Cambridge. He was afterwards called to the Bar but he never practised his profession. In 1872 he went to Transylvania, and again in 1874, in

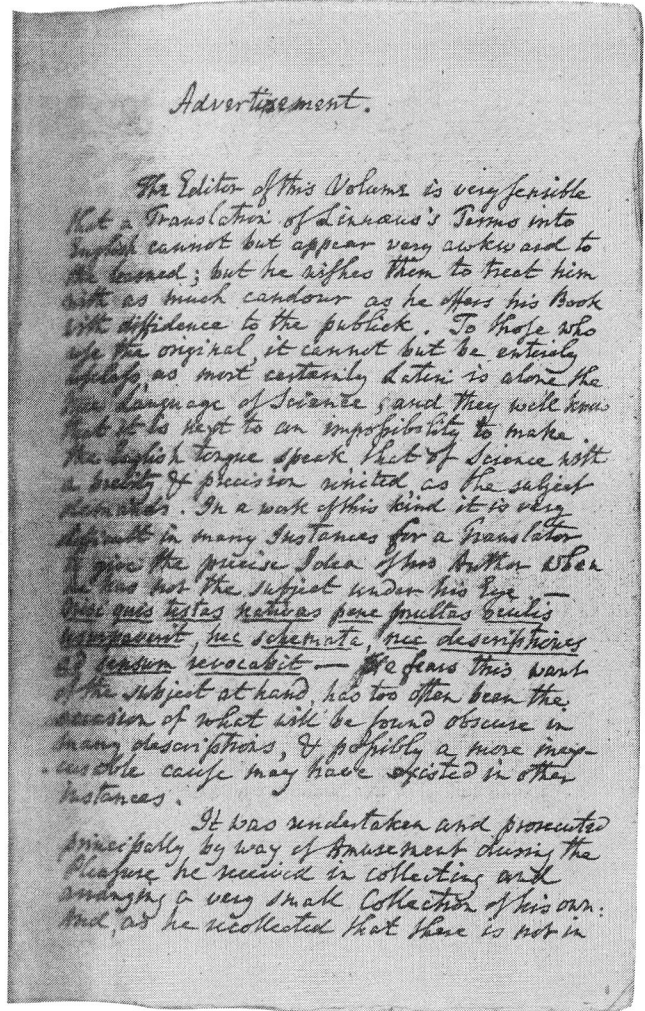


Fig.3. Pulteney? manuscript, advertisement page (see 159).

company with the late Mr J.A. Harvie Brown. In 'The Ibis' for 1875 will be found a joint paper recording their experiences and containing an excellent account of the Birds of that attractive district. But perhaps his best ornithological work was done in Asia Minor, in the Sicilian Taurus, where he spent the winter of 1875-6 and the early months of 1879. The results of the first of these expeditions will be found in 'The Ibis' for 1877 and 1878, that of the second in 'The Ibis' for 1880, but for some unknown reason this latter paper was left uncompleted.

There are many of his bird-skins still in the British Museum collection, chiefly obtained from the Seeböhm collection. His only other publication was a translation of the ill-fated Crown Prince Rudolf of Austria's "Jagden und Beobachtungen," issued in 1889 as "Notes on Sport and Ornithology, by His Imperial and Royal Highness the late Crown Prince Rudolf of Austria. Translated with the author's permission by C.G. Danford."

He presented the pair of Nutcrackers with their nest and eggs mounted in the exhibition series in the bird gallery of the Natural History Museum, while his name is commemorated in that of the Lesser Spotted Woodpecker of the Taurus Mountains, named by Hargitt Picus danfordi.

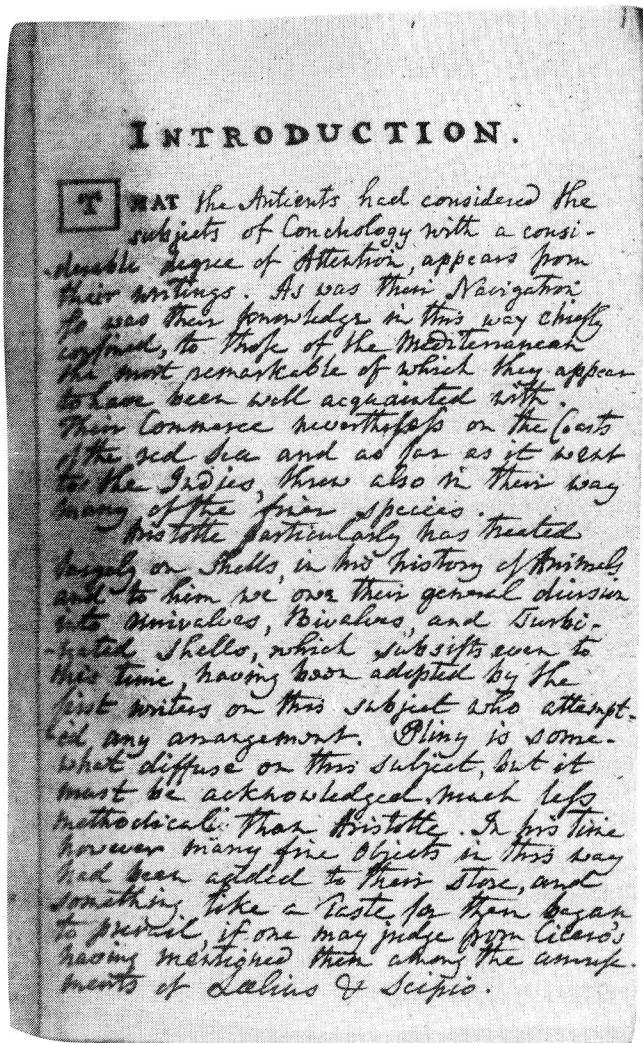


Fig.4. Pulteney? manuscript, first page of Introduction (see 159).

Danford spent a great deal of the rest of his life in Transylvania until the outbreak of the war, when he moved to the north of France, where he remained till his death.

Danford married in 1872 Antonette Emily, daughter of Prof. R. Dyce, of Aberdeen. She died shortly before her husband. They leave a daughter, Antonette Beatrice, who has kindly supplied much of the information contained in this notice, and a son, Colonel B.W.Y. Danford, R.E., D.S.O., at present serving in Egypt, who has himself been a member of the Union since 1896.'

From the information given there it seems that the palaeontologist of Reighton Hall and the co-dedictee of Maw's Monograph are the same. There are, however, still some discrepancies and I would be grateful for any further information, particularly on the known or possible whereabouts of any correspondence or other papers of Mr and Mrs C.G. Danford.

M.D.C.

158 Thomas Charles MAGGS (c.1824-1900) of Yeovil, Somerset

CLEEVELY, p.193

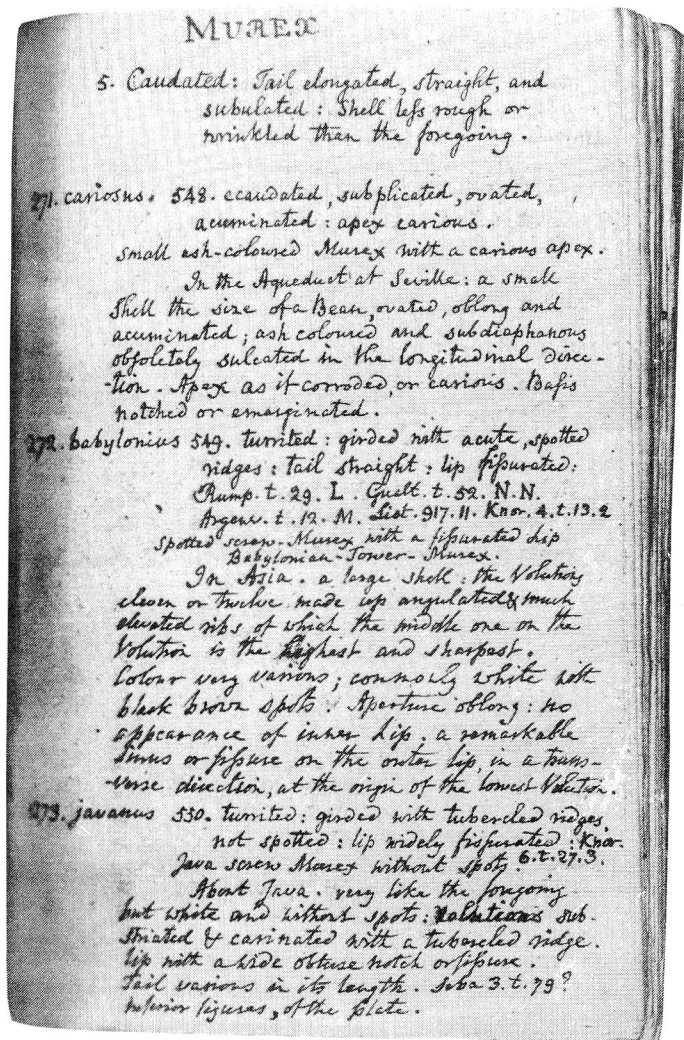


Fig.5. Pulteney? manuscript, sample page of taxonomic descriptions (see 159).

In 1881 James Buckman (1814-1884) described a new species of Inferior Oolite ammonite from Dorset and Somerset as Ammonites mansellii Buckman n.sp. (Q. J1 geol. Soc. Lond. 37, 64). But his description was very generalised and he spoke only of 'several examples' without figuring any. In 1882 his son S.S. Buckman (1860-1929) redescribed this species as Sphaeroceras mansellii (sic) (J. Buckman) and noted that 'two fine specimens were obtained from this place [Chatcombe, near Sherborne] by T.C. Maggs Esq. I do not know of any other specimens' (Q. J1 geol. Soc. Lond. 37, 597-598).

These two specimens were properly discussed by S.S. Buckman in a second paper in 1882 (Proc. Dorset nat. Hist. antiq. Fld Club, 4, 141-142, pl.2, fig.3a, b) which also included the first figures, but of only one of the specimens. Of these two specimens one has since been located by Colin Parsons in the S.S. Buckman collection (no.478) at the British Museum (Natural History). The other specimen, the one figured, remains 'lost' and is sought by Dr A. Galacz, Institutum Palaeontologicum, Lorand Eötvös University, Kun Béla Tér. 2, H-1083 Budapest, Hungary.

T.C. Maggs - the collector - is an interesting character whose career is summarised by Torrens (1978. Proc. Dorset

nat. Hist. archaeol. Soc. 98, 38-39). In 1885, some time after a scandalous court case in 1875 which involved the brother of the author of Lorna Doone, Maggs' collection was divided between the Dorset County Museum and the well-known Weymouth dealer Robert Damon (1814-1889). It was from the latter that S.S. Buckman was able to purchase some of the best of Maggs' ammonites. After the court case Maggs moved to Clarendon Villas, West Brighton, Sussex, though he died at Richmond Hill in Surrey. In view of this and the known wide dispersal of the Maggs collection the figured specimen sought by Dr Galacz could be anywhere! Information would be most welcome.

H.S.T.

159 Richard PULTENEY (1730-1801)

BRIDSON et al., numerous references
CLEEVELY, p.238
DESMOND, p.507

W. John Quayle (51 Whites Road, Bitterne, Southampton) writes:

'Just recently a manuscript dated 1776 and believed to have been written by R. Pulteney (1730-1801) was found in a second-hand bookshop in Southampton. The manuscript is bound between boards, with string hinges and a hand-written label on the spine. This has faded, but the title can still be read - Manuscript Book on Shells. The book is 8vo of approximately 330 pages in the following order:

Title page (Fig.2) - 'A System of Conchology containing the Species of Shells according to the Method of Linnaeus...'
Advertisement (Fig.3), 3pp
Introduction (Fig.4), 14pp
General, 5pp
References, 4pp
Pages headed Testarum, 4pp
Glossary, 11pp
Table of essential characters, 2pp
Descriptions of 835 species of shells (Fig.5). The date Jan 31, 1776 appears at the bottom of the first blank page following the descriptions. This is in the same hand as the rest of the text.

The manuscript has been seen by staff at the British Museum (Natural History) and selected photostat pages were sent to P. Dance, who suggested that it might be by R. Pulteney. The volume has been compared with known examples of Pulteney's work and it seems that both the format and handwriting fit well.

Can anyone give any information on other Pulteney manuscripts on conchology, and on the possible historic or taxonomic significance of this volume? Any help in confirming it to be the work of Pulteney would be of great value.'

H.S.T. writes: 'The most useful cache of Pulteney MSS is that presented to the Linnean Society in 1953 (see Proc. Linn. Soc. Lond. 171 (1), 15-26 (1960)). A study of this archive may yield more data about his conchological activities.'

BOOK REVIEWS

Light, R.B. and Roberts, D.A. (eds.). 1984. Microcomputers in museums. MDA Occasional Paper 7, 78pp. Price £6 (£5 to MDA members) (paperback).

I had bought this report before I received the review copy and, I suspect like most recipients, I scanned quickly through the sections of immediate interest before placing it on the shelf for periodic reference. Having had to read it from cover to cover for this review I now realize how much I missed and just how much insight this team of authors shows. There can be few professions as small as ours so well served in this vital area of new technology and, whether the flickering cursor is a regular irritant of daily routine or a remote electronic miracle, there will be few museums it will not illuminate in the next decade. The authors and editors of this report have set themselves the task of preparing a non-technical introduction to microcomputer systems and their vocabulary as a prelude to a treatment of their potential in museums. Have they succeeded and, perhaps more importantly, have they argued the case in a way that will attract the uninitiated into the subject?

First it should be said that a complete beginner would have no difficulty understanding what is being read. Each newly introduced concept is underlined and immediately explained, a practice maintained throughout the text; in this way types of computers, their essential components, their operation, and the programs that make them operate quickly become familiar. This is the essential background to any understanding of microcomputers tackled in dozens, if not hundreds of books, but here done with considerable conciseness and clarity.

It is sections 5 to 9, covering applications, museum needs, acquiring a system, solutions to problems, and user experience, which are its main original contribution to museum literature and the real claim on the curator's attention. In my view it more than justifies the effort because it is firmly rooted in common sense and experience and the advice given is absolutely sound; indeed the in-spissate wisdom in some throwaway lines justifies a fuller treatment at times.

Table I in section 5 (potential applications) lists almost fifty uses of microcomputers without any claim to comprehensiveness. Few museums active in this field could claim even half of them, yet all are relevant. The size, cost, and operating requirements of systems to perform a variety of basic tasks is given. If you are moving over to computerized documentation this is exactly what you need to know, and you ignore this section at your peril.

Section 6 on relevant museum requirements is a clear approach to the management of change involved if evaluation shows that a micro-computer system can perform a standard

procedure better. It counsels realism in fields where many museums have blundered into impasse. One person should be responsible for co-ordinating investigations; choose software with care and an eye to support and documentation, then look at possible hardware; examine expandability of any system established with initial unavoidable constraints; if a large multi-user system is acquired without a man to go with it then system management, system development, and day-to-day operating problems inevitably arise. These are just a few examples of the sound advice here.

Section 7 on buying and running a system barely wastes a word. If you are buying a system read it with care. The legal advice aspects, the care needed in ensuring that quotations include everything relevant, the inadvisability of accepting an authority's purchasing policy where it results in an unsuitable machine and prejudices what is for most museums a massive investment of curatorial effort worth tens, if not hundreds of times the initial purchase price, these are matters of such overriding importance that they cannot be overemphasized. How often have committees and trustees balked at the annual 10 - 15% of purchase price maintenance contracts? Once committed to the computer solution there is no going back; the financial commitment is permanent and needs to be understood before embarking on this course.

Section 8 gives three examples of possible uses of the technology (actual to many museums) - object documentation being the most important. Again throwaways like 'it is important that any software used at the data entry stage does not artificially limit or distort content' are so vital. If only they had been pushed with authority say five years ago, how many fewer would our problems have been.

The museum experience section and the sources (organisations, journals, other literature, software and hardware) are useful additions though they generate in me a measure of unease which I will enlarge on in a moment. The index is excellent, a model of its kind.

Any criticisms? Yes, a few, but these are minor and the most important is beyond the scope of this work. The literary style is mechanical and humorless; it might have been created by a machine of the kind described (though it probably results from tight editing of material from five authors). Pictures (there are none) would help the beginner to recognize what he sees in his first sorties into hardware. What does a microprocessor look like; or come to that a communication port? If we are told not to skimp on consumables like diskettes, why not cite examples of the best?

Perhaps the most depressing consequence of reading this report is the implication of exercising the choice of the advice on

software and hardware listed in section 10. It will lead to a new generation of problems that will require a new report entitled something like 'Harmonization of museum documentation systems' sometime within the next decade. Why doesn't someone (with the judgement of a Solomon of course) write it now and have done with it: a handful of documentation system options, a handful of compatible software systems suitable for them, and the machines to run them on. The dream of a national inventory articulated as one of the earliest and purest objectives of the Museums Association might then become the reality that gives museums their professional role somewhere near the centre of the information revolution.

For an investment of £6 this excellent document may start you on that road. No museum with serious intentions in the field of computerization can afford to ignore it.

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Murray, J.W. (ed.). 1985. Atlas of invertebrate macrofossils. Longman and the Palaeontological Association, London, xiii + 241pp. Price: £13.95 (paperback).

Judging by the rich variety of articles that appear in the Geological Curator, the work of a museum geologist can encompass virtually any aspect of science, art, history, and technology. One must assume that these articles have been researched and prepared during 'business hours' and are therefore regarded, at least by the authors concerned, as being part of normal curatorial duties. As this sphere of interest becomes ever wider, so the definition of 'normal curatorial duties' becomes ever broader. The process is self-fuelling. If one stops to consider this situation, it is inevitable that one eventually asks the fundamental question - What is the central function of a geological curator?

Charles Waterston began to answer this question, at least for one branch of the science, in his 'Unique role of the curator in palaeontology' (Waterston 1979). He said that this function 'is to acquire and maintain collections of fossil material for future study'. This has it in a nutshell. Further, he said that 'The curator ... must pursue his [acquisition] policy unswervingly and yield to pressures for other services only in so far as he can provide them without prejudicing the well being of the collections which he holds in trust for future generations'. Notice his emphasis on acquisition and maintenance, rather than, say, research and display.

In the Guidelines for the curation of geological materials (Brunton et al. 1985) we develop this theme further and detail the extent of the curator's responsibilities towards palaeontological collections. In

particular, we provide an approach to the classification and nomenclature of fossils which we regard as part of the philosophy a curator should adopt. On classifications, for example, we recommend that curators 'use or erect classifications which are likely to stand the test of time and be subject to minimal academic change due to reinterpretation or fashion. Favour those which, even assuming change, will continue to be meaningful to workers for many years to come, e.g. published works'. On the identification of fossils, the Guidelines 'do not give advice on how to identify particular specimens, but here emphasize the importance of obtaining specialist assistance. A curator cannot expect to identify accurately all the species in his care and we recommend that a policy be adopted whereby museums engage specialists from university departments or other museums'.

In essence then, it is the classification of specimens which is nearer to the central function of a geological curator than is specimen nomenclature; I believe this stress to be all-important to a thorough understanding of one's role in the museum. It is for this reason that I attach great significance to the reference sources used for classifications, and to the data standards used for the documentation of classifications. In practice (and again as we recommend in the Guidelines) the published work regarded as the authority on the classification and nomenclature of invertebrate fossils is the multi-volume Treatise on invertebrate paleontology. Every museum geology department should have a copy, but there are unfortunately several problems with the Treatise. First, it is large and expensive, even ignoring the fact that some parts are now out of print. Secondly, it is not the easiest of references to use, especially for the non-specialist curator who nevertheless needs a gross classification to organise his collection properly. Thirdly, and most relevant in the present context, is that its taxonomy gradually becomes out of date. We argue in the Guidelines that this does not matter because, even with change, it 'will continue to be meaningful' and 'useful and valid'. If the rugose corals are now regarded as a subclass rather than an order, it really doesn't matter; no-one will be confused by the retention of the former classification.

In view of these problems, a case for replacing the Treatise as a reference for museum classifications could be argued and the Geological Curators' Group might have the task of defining the brief. Such a brief might say something about a complete though concise classification; about fine illustrations; about authoritative authorship; and about a worldwide approach.

It was with great interest therefore that I first read of the imminent publication of the Atlas of invertebrate macrofossils, which seemed to be the product of just such a brief. Could this be the answer to the curator's prayer? Well, to be fair, I should say that it was never meant to be (the GCG

did not write the brief) but I have chosen to preface my review in this way because the Atlas is of such obvious potential relevance to a curator in charge of palaeontological collections, even if it was not specifically designed for him. I cannot assume, though, that all curators will view the relevance and potential from the same angle as myself: hence my protraction.

To begin then, at the beginning, the Atlas has been published as a collaborative effort between Longman and the Palaeontological Association. It is one of a series, the first three volumes being Atlas of rock-forming minerals in thin section, Atlas of igneous rocks and their textures, and Atlas of sedimentary rocks under the microscope. This book has been edited by Professor John Murray of Exeter University and represents the joint effort of fourteen authors; its stated purpose is to 'provide an illustrated classification of the major macrofossil groups'. Whilst the preface does not exactly define the intended audience, it does refer to 'the student of palaeontology' and 'undergraduate courses'; in addition, the publicity leaflet includes 'biologists and amateur palaeontologists'. There are nine chapters, namely: Introduction; Sponges, chaetetids and stromatoporoids; Cnidaria; Bryozoa; Brachiopoda; Mollusca; Echinodermata; Graptolithina; and Arthropods. In addition, there is a Selected List of References, and a Taxonomic Index listing all the taxa represented in the Atlas. Within these taxa more than 900 genera are covered. Perhaps the outstanding feature of the book is the quality of the plates, consisting of 'over 1400 original photographs' which are quite the best I have seen at almost any level of publication (far better, incidentally, than those reproduced on the advertising leaflet). It is a pity that the plates are identified only by a number, which means that the reader must always refer to the text paragraph with the same number in order to discover the genus or species name. I found this irritating. More disturbing is the way the plates have been laid out. Each plate (i.e. each photograph) has been prepared so as to have a black background. The regular distribution of these plates on the page has produced a grid-like effect of black squares on a white background, the result being a rather nauseous optical illusion of shifting black spots at the intersections of the white margins. If one can ignore this, the superb quality of the photography is a delight.

The chapters, naturally enough, vary in size according to the importance or size of the groups covered. For example, the trilobites get twenty-three pages, the ammonites twenty-eight, and the poor gastropods twelve. Down to class or subclass level, each taxon is introduced by a discussion which usually includes one paragraph on the 'diagnostic features' of the group and another on the 'basis for subdivision'. Where the group allows it, there is an artificial key as an identification aid. I found these introductory parts uneven and inconsistent (largely, I suppose, a result of

inadequate briefing of the authors). The trilobites, corals, and bivalves for example do rather well, while the brachiopods, gastropods, and graptolites leave something to be desired.

The bulk of text is, of course, taken up with the generic descriptions. Each is serially numbered and headed by the genus name, author, and date. The numbers mirror those with the plates and are decimal along the lines of Hey's Mineral index. Unfortunately for the curator, the numbers relate to the chapters and not to each of the major taxa - thus there is no number for the order Ammonitida or the prosobranch subclass of the gastropods. This only matters in that the numbering system cannot usefully be turned into a coded museum classification in the same manner as Hey. A more general criticism is the confusion caused by figures within the text being referred to by the same style of number. In the cephalopod section, for instance, there is a Pl. 6.17.16 and a Fig. 6.17.16; worse, they each have an A and B division. This could easily have been avoided. Each genus is described by a few lines of text in a similar fashion to the Treatise. There is some inconsistency in format, but generally the stratigraphic and geographic ranges are given, together with the name of the species represented in the accompanying plate, its range, locality, and size. I am sorry to see that specimen identity numbers and holding institutions are not given, though at this level of publication, their inclusion is certainly arguable.

I must now say that I cannot ascertain the basis upon which the genera have been chosen. The choice can hardly be said to meet the aspirations of the editor, who says in his preface 'in most cases, identification to generic level will be possible'. I cannot see how, since the editor himself confesses that there are tens of thousands of genera, and in chapter 5 L.R.M. Cocks says that there are 'more than 3400 brachiopod genera known ... and the selection of only just over 100 genera for inclusion in this book can only be arbitrary'. Well, not quite in this particular case since, in the brachiopod section, the vast majority of genera are well illustrated by British or at the very least European forms, a choice well made. In contrast, the order Temnopleuroida, consisting of mainly Asian and southern hemisphere genera is included in the Echinoidea, whereas the order Physomatoidea, much more relevant to Britain and Europe, is left out.

If the Atlas cannot be recommended as a comprehensive identification guide, then I am afraid it cannot be recommended as a comprehensive guide to classification either. Although some forms have been included which clearly illustrate the wide range of morphological types in certain taxa, there are too many others that have been omitted which could have contributed to a more complete manual. There is no overall scheme of classification presented either as an introduction to the whole Atlas or, except in

the briefest of ways, to some of the component sections. The introduction to the Echinodermata, for example, refers to the superphylum Dextiothetica as consisting of the 'group chordates plus echinoderms'. What are 'group chordates' and why does the Atlas not tell me? The whole layout of the book I feel acts against a clear understanding of the classification of the genera represented.

If I were to justify a recommendation to buy this book, I would do so on the following grounds: first, the plates are very fine and are a useful reference; second, and despite my criticisms, many of the commoner British genera are included and are more attractively presented than in the BMNH British Fossil Handbooks (which at £12.50 for a cased set represents only a £1.45 saving). The Taxonomic index of the Atlas is very useful and allowed a rapid result in the case of a volunteer in my museum who was unfamiliar with Actinocamax and who otherwise would have had to take pot luck with finding the name in the BMNH Handbooks. Curators are not above such problems. In general, I would advise curators to obtain a quantity of the Atlas to retail from their bookshop and to obtain a copy from this stock by whatever means they have at their disposal.

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Knight, H.A. 1984. Carnosaur. Star Books (Paperback Division of W.H. Allen & Co.), 214pp. Price: £1.95 (paperback).

Honestly, I don't normally buy books like this. It was an icy morning, I was immersed in museology, and the girl in front of me at the Leicester newsagent had just bought the last copy of The Times; so it was almost without thinking that I saw a book with a nice academic title like Carnosaur and bought it forthwith, there being few adult books about dinosaurs.

It is certainly for adults, as I should have guessed from the cover - a large hand (Megalosaurus), with distinctly unhygienic nails, groping through a doorway. On the back the blurb summons up dire visions, '.... Its breath foul. Its claws capable of ripping a human being apart in the time it takes to blink. For 150 million years it ruled the world. And now it's back - CARNOSAUR. From the author of SLIMER'. 'Appalling nastiness!' was The Times verdict.

And so it is. Nevertheless, one can admire the basic simplicity of the formula. The old adage has it that all good stories have mystery, sex, aristocracy, and religion; Carnosaur follows it precisely, to the point of substituting the mass media as the new opium of the masses. The hero and heroine are both journalists, by the way - George, Georgina, and the Dragons? Museums and academics do not feature at all except for the obligatory Dr Frankenstein type. As for the BM(NH):

'Inside the tank the crew debated whether a shell from their 20mm cannon would penetrate the dinosaur's natural armour or whether they should try to kill the thing at all. It was obviously herbivorous and might not present any threat to human life. The task commander was about to suggest they wait until the scientist arrived from the Natural History Museum, when the dinosaur jumped to its feet and charged them'.

Obviously they needed an Area Museum Service geologist!

Scientifically Carnosaur is very up-to-date and I must here condole Mike Benton, whose recent article on dinosaur cloning (New Scientist, 105, 41-43) has been so brutally preempted. The book is in fact rather avant-garde in certain areas, notably in its assertion that Cambridge undergraduates (in this case Melissa, Charlotte, and Roger) form part of the diet of plesiosaurs - although this does fit in rather well with the concept of the larger forms as generalist predators. Indeed, Carnosaur is to be commended for following the latest work in functional morphology:

'...the creature charged him. Emitting an ear-splitting screech it covered the 10 feet with just two strides of its powerful hind legs. The claws on its forelegs grasped Cartwright by the shoulders and lifted him into the air. At the same time one of the hind feet rose up and slashed him down the length of his body. The scythe-like middle claw opened up Cartwright from neck to groin before he even realised what was happening'.

'...The creature's head suddenly moved into his field of vision. It was bending over him. As the head came closer he felt its hot breath on his neck and Cartwright knew nothing more.'

After such a cutting description of Deinonychus it seems churlish to complain about the lack of references or index. Instead, I am now left with a growing fear about just why children are so fond of dinosaurs, and life will never be the same again.

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NOTES AND NEWS

COMPILED BY TONY CROSS AND PETER R. CROWTHER

GEOLOGICAL MUSEUM CELEBRATES 150th ANNIVERSARY

The Geological Museum at South Kensington celebrates its 150th anniversary this year. It was founded together with the British Geological Survey in 1835 in a small house off Whitehall. Some years later the museum and the Geological Survey moved to the Museum of Practical Geology in Jermyn Street and then, in 1935, moved again to the present site in South Kensington. The Geological Museum, which has long been regarded as the national museum of earth sciences, became the responsibility of the Trustees and Director of the British Museum (Natural History) on 1 April 1985.

The existing displays on the formation of the Earth, British geology, and gemstones will be augmented this year by a major new exhibition Treasures of the Earth (see below) and there will be several other events to mark the centenary:

Geology Serves the Nation. A temporary exhibition showing the history and work of the British Geological Survey. On display now until 16 September.

Past, Present and Future of the Geological Museum. A one-day, admission free meeting to be held at the museum in autumn for geologists and enthusiasts.

Other events. A fine collection of decorative marbles donated to the museum by a private collector is on display until the end of December, and there will be a small display on Welsh gold from January 1986.

TREASURES OF THE EARTH

A major new permanent exhibition with the above title opens in October 1985 at the Geological Museum in London. The press notice (from the Natural History Museum, of course) reads:

In order to enjoy the comforts of modern life we rely to a surprising extent upon the natural resources of the Earth - most of which are finite and irreplaceable. The exhibition shows how our daily lives depend upon the geological resources of our planet in a host of unseen ways. Visitors may wonder at the wealth of useful and beautiful substances forged in the Earth over millions of years, or, using an exciting new technique employing micro-computers, may probe as deeply as they wish into the subjects which interest them.

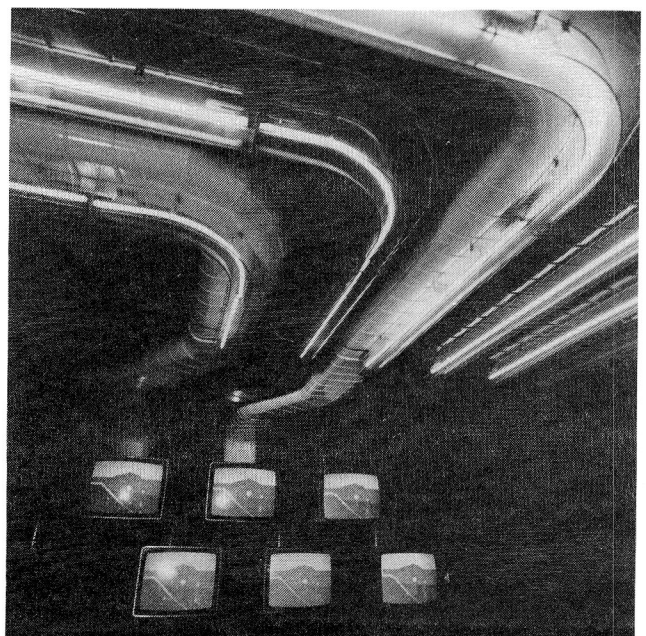
From an introductory film, visitors follow neon ceiling-mounted strips which are colour coded for six main groups of resources. These lead on to re-created rooms from an ordinary house - kitchen, bathroom, sitting room and garage - which have been chopped in

half to expose their contents, structure and inner mechanisms. By pressing coloured keys the visitor can discover a variety of often surprising ingredients in normal household articles. Where, for instance, are limestone and nickel to be discovered in the kitchen? What do sand and clay have to do with a finely-tuned car engine, and where would you find baryte in a bathroom?

A section on water and fuel uses working models and displays to convey challenging statistics on our use of these prime resources. Further into the exhibition is a large display of raw materials together with some of the objects made from them - from diamond drillbits and titanium hip joints to submarine cables and throwaway packaging. One hundred larger, more robust objects are on open display and may be touched.

The final wall of the exhibition consists of a number of complex auto-responsive interactive displays, specially developed by museum staff for this exhibition. They form a resource bank which is programmed to respond to the interest taken by visitors. The information can be probed deeply and at length, or the visitor can simply scan and move on to the next subject, leaving the equipment to reset automatically. This facility is made possible by using a number of micro-computers linked to laser discs, and contains thousands of units of information.

The exhibition has taken several years to achieve, and much help has been received from manufacturers, from other museums, and from research establishments. The exhibition is admission free.



Part of the new exhibition 'Treasures of the Earth', opening October 1985 at the Geological Museum, London.

COLLECTIONS INFORMATION NETWORK:
GEOLOGY (CING)

During his term of office as GCG Recorder, Alan Howell (Bolton Museum) suggested that it would be useful to set up an 'ad-hoc' information network of geologists throughout the country to act as local watch-dogs on geological matters. These persons would supply the Recorder with information about collections, sites, dubious museum visitors, etc. if they felt that they needed some support from GCG, or if the data would be of use to other members of the geological museum profession. The Recorder would thus be in a position to keep GCG committee up-to-date with local events, and in turn would pass on relevant committee decisions to the network.

It is envisaged that participants in the scheme would normally not have much to do! However, GCG committee may require them occasionally to act as a local GCG representative at meetings when a geological opinion (with the added weight of representing the national body) may be required. If anyone wishes to formally participate in the network, please contact the Recorder, Don Steward, at the address given on the inside front cover of the Geological Curator. CING already has 'field-agents' in Perth, Bolton, Leicester, Cardiff and Newham, but obviously the more people providing information, the better the ability to respond to matters that may affect geological material.

Dare it be said
.....please CING out about threats to geological material!

IRISH SOILS DISCLAIMER

Eileen Farley (Geological Curator, National Museum of Ireland) contributes the following:

I wish to draw your readers attention to an erroneous statement published in Sheets of many colours - the mapping of Ireland's rocks 1750-1890 by Gordon L. Herries Davies (1983: Royal Dublin Society Historical Studies in Irish Science and Technology, 4). In this book Dr Herries Davies claims that a large collection of soil samples lies 'unopened in the geological store of the National Museum of Ireland'. The soil samples were collected in the 1840s and 1850s by officers of the Geological Survey of Ireland, having been so directed by the Chief Commissioner of Woods. They were lodged in the Museum of Irish Industry whose then Director, Robert Kane, had requested this collection both for display and 'chemical examination'. The Museum of Irish Industry was abolished in 1867 and a portion of the zoological collections was brought over to the Natural History Museum on 25 September of that year. Their rock and mineral collections (also brought over to the Natural History Museum) are still extant, but there is no record of the date of transfer. The building in which the Museum of Irish Industry had been housed was converted into the Royal College of Science.

Research into the fate of the soil samples has revealed that a room full of Museum of Irish Industry soil samples and sieving and grinding equipment existed in the College of Science in the 1950s. These were then disposed of without consultation with the National Museum as space was at a premium. Therefore it appears that none of the original Geological Survey samples now exist and, as far as our records can prove, they were never housed in the National Museum of Ireland.

GEOLOGICAL SITE CLEANING AND THE NCC

Many GCG members will already have seen the leaflet Practical geological conservation produced last year by the NCC's Interpretative Branch. Its content may have caused a few raised eye-brows; several members of the NCC's Geological Conservation Review team express their own reservations as follows:

'We feel that some comments are required on the leaflet Practical geological conservation. While the fostering of a greater sense of responsibility towards geological sites is laudable, the implications of some of the statements and suggestions in the leaflet are alarming. In particular, we have reservations about the blanket suggestion that volunteers should go out and 'clear' sites. It would be undesirable to have inexperienced people going in with 'garden tools' to many sites, particularly to those with mineralogical or palaeontological interest, or which show delicate sedimentological or structural features. The resulting damage might well be irrevocable. Also, the suggestion that 'loose debris' should be cleared away from the rock face of any geological exposure as a matter of course is the height of irresponsibility, since one of the best ways of minimising damage to sites is, wherever possible, to collect only from such debris. If this debris has been completely cleared, visitors will be compelled to attack the rock face to obtain their specimens, thereby shortening the life-expectancy of the site. Even the removal of unsightly or apparently useless debris might be inadvisable, as talus-slopes can provide a means of examining otherwise inaccessible parts of the rock face. Moreover, the unsupervised excavation of, often unstable, scree material can be extremely hazardous. If such 'geological gardening' was done by every party visiting a site, the number of accessible field sites in good condition would be rapidly depleted.

Another statement which might worry GCG members who have co-operated with the NCC on site-cleaning projects is that the work is usually undertaken 'to provide outcrops for educational fieldwork'. They would probably be less willing to help us if they thought that sensitive sites were being excavated only so that hordes of students could be let loose on them. The leaflet is misleading on this point as, in fact, about three-quarters (146) of the 200 or so sites cleaned by the NCC have been excavated primarily to

facilitate research projects. Such research is a vital part of the site-selection procedure of the Geological Conservation Review Unit, enabling a more rational decision to be made as to whether or not a site merits SSSI status. Even with established SSSIs, such excavations can have an important role in providing additional scientific justification for their long-term conservation. Among the better known projects of this type are Bearsden (Carboniferous vertebrates, 1982), Puddlebrook (Carboniferous floras, 1982/84), Devil's Hole (ORS palaeoenvironments, 1981/83), Swanscombe (Pleistocene stratigraphy, 1982), as well as the works undertaken for the IUGS subcommissions on Silurian and Carboniferous stratigraphy (1978/85 and 1981, respectively). The NCC is principally concerned with protecting its network of SSSIs and nature reserves and, therefore, most site-cleaning has to be directed towards these. This is not to deny the importance of establishing educational trails; if properly planned and co-ordinated, they can relieve pressure on the more sensitive SSSIs. However, the NCC is not an educational organization and so can only direct a limited proportion of its facilities towards such work.

As members of the GCR Unit who have been instrumental in organizing the 'main-line' site cleaning of the NCC, and who hope to continue with this important activity in the future, we feel that it is important to make these points clear. We all have a part to play in geological conservation, and the suggestion that interested persons monitor any sites in their area is certainly a useful one. However, it must be emphasised that direct action on a site requires input from specialists who are familiar with its particular interest and should be undertaken only after careful consideration.

We hope that these comments will reassure any geologist who was thinking of co-operating with us, but was afraid of the possible consequences of our work.'

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THE RUTLAND DINOSAUR

Preparation of Britain's most complete dinosaur skeleton is nearing completion at Leicestershire Museum. Found at Great Casterton, Rutland, in 1968, the skeleton is that of a Cetiosaurus, a sauropod dinosaur. The Leicester specimen was an animal 14 metres long, 3 metres high and weighing 9 tonnes; it lived about 165 million years ago. It has taken four years to prepare the skeleton by removing four tonnes of ironstone, in which the hundreds of fragments of bone were encased. The missing pieces (including the skull and tip of the tail)

have been modelled by comparison with similar dinosaurs in France, Morocco and the USA, as well as elsewhere in Britain. In addition to being the most complete dinosaur yet found in the UK, the Rutland dinosaur is the most complete Cetiosaurus found anywhere (and probably the oldest) and so is important for establishing the evolution and classification of sauropods.

Dinosaurs of any kind are extremely rare in Britain, and this will be the first-ever British sauropod dinosaur to be mounted for exhibition as a complete skeleton. Along with other vertebrate fossils from Leicestershire Museums' collections, the Rutland Dinosaur Exhibition will be opened at New Walk Museum, Leicester on Saturday 9th November 1985 by Janet Ellis of BBC TV 'Blue Peter'. Further information from John Martin, Keeper of Earth Sciences, Leicestershire Museums Service. Tel: (0533) 554100 extn. 263.

ORDER YOUR 'GUIDELINES' NOW!

Howard Brunton points out that it is important for GCG members to take advantage quickly of the 'members discount' price for Guidelines, as set out in the leaflet enclosed. Copies with the folder are limited to 500 in this first edition, so get your order in fast - before they are all sold elsewhere!

AMSSEE TRAVELLING GEOLOGY CURATOR

The Area Museum Service for South Eastern England has recently appointed a peripatetic geology curator whose main purpose is to advise and help member museums on the care and use of geology collections. Simon Knell has been appointed for one year from 9 September 1985; he will be based at the Geological Museum, London. His brief is to survey and record geology collections in the AMSSEE area; advise on and assist with their identification, ordering and storage; advise and assist with the conservation and care of collections; advise on the best use and display of specimens; prepare a report on the project; maintain close liaison with Geology Museum/BM(NH) staff, the AMSSEE Museums Adviser and London Museums Officer, geology museum staff in the area, and the Geology Curators' Group; and provide regular reports to the Project Steering Group. Simon would welcome any information on uncurated collections in the AMSSEE area, and any other comments GCG members may care to make about the creation and function of this new post.

INTERNATIONAL PALAEOONTOLOGICAL ASSOCIATION

Plans are being prepared for the 5th Edition of the Directory of Paleontologists of the World to be published by the International Palaeontological Association in time for distribution at the 27th International Geological Congress, Washington, D.C., 1989. Formal notification and timings will be issued in 1986; requests for information

from individual paleontologists and paleontological associations will be distributed throughout 1987 and 1988 with a deadline for receipt of data of December 1988; computerization of data will proceed through 1988 with final preparation of text and publication during 1989.

It is intended to provide the most complete listing possible of all the active paleontologists of the world. We expect to obtain data from paleontological societies and organizations of all kinds as well as from individual paleontologists. Paleontological groups and individuals who are not members of IPA or who do not regularly receive the journal or newsletter of an IPA Corporate Member, should contact the Directory editor or IPA secretariat during 1987-88 to insure inclusion in the Directory. Suggestions and advice from all interested parties are welcome.

Copies of the 4th Edition of the Directory are still available from R.E. Grant (same address as Editor, below left) for US \$7 (to individual members of national paleontological societies or sections) or US \$10 (all others).

Rex A. Doescher Directory Editor Dept of Paleobiology E-207 Natural History Smithsonian Inst. Washington, DC 20560 USA	William A. Oliver, Jr. Secretary-General, IPA US Geological Survey E-305 Natural History Smithsonian Inst. Washington DC 20560 USA
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DEVELOPMENTS AT DUDLEY MUSEUM

John Crossling (Warwickshire Museum) recently visited Dudley Museum to find out how the MSC scheme was progressing with the cataloguing of the collections. He reports as follows:

'I am pleased to say that cataloguing is getting near its conclusion. Joan Round, the MSC supervisor, has produced a list of specimens that have not been located during the current operation, which is reproduced below. These specimens have gone missing from Dudley between 1980 (when a list of

specimens was made by the Black Country Geological Society) and 1983 (when the present MSC scheme commenced). During this period many people obtained free access to the collections. The catalogue numbers were written on the specimens in red ink. In the case of Periechocrinus and Dimerocrinus not all the specimens were catalogued, hence the discrepancy between the number of specimens (in brackets) and the number of catalogue numbers. All the material was collected either from the Wren's Nest or from Walsall.

This information should at least put curators on their guard if any good quality material of this kind is offered to them in the near future - and of course get them to look again at anything that they have already taken in!

Missing fossils

TRILOBITES

	<u>Cat. No.</u>		
<u>Proetus latifrons</u> (2)	1737	1738	
<u>Cyphaspis megalops</u> (1)	1761		
<u>Lichas hursutus</u> (1)	1767		
<u>Acidaspis</u> sp. (2)	1796	1805	
<u>Encrinurus punctatus</u> (2)	1823	1831	
<u>Encrinurus variolis</u> (2)	1853	1667	
<u>Calymene blumenbachii</u> (13)	1871	1885	1888
	1891	1895	1904
	1905	1910	1909
	1911	1913	1920
	1663		

Calymene blumenbachii and

<u>Dalmanites caudatus</u> (1)	1666		
<u>Acaste downtowniae</u> (2)	2018	2019	
<u>Dalmanites caudatus</u> (4)	2033	2037	2043
	2090		
var. <u>y. nexilis</u> (4)	2054	2056	2069
	2093		

GASTROPODS

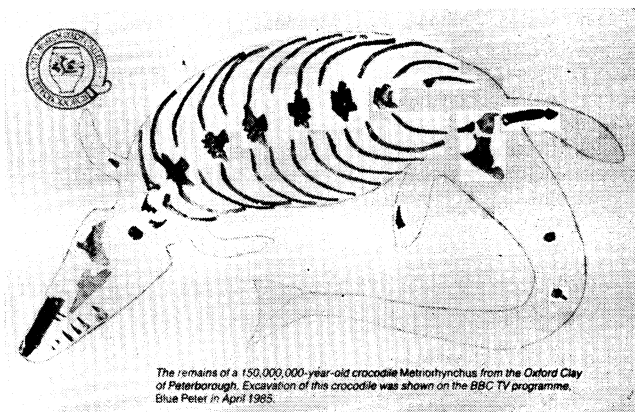
<u>Bembexia Lloydii</u> (3)	1446	2330	2316
<u>Murchisonia bilineata</u> (1)	1448		
<u>Euomphalophetus alatus</u> (2)	1465	1464	
<u>Poleumita discors</u> (1)	1478		
<u>Poleumita rugosus</u> (2)	1483	1488	
<u>Eunema cirrhosa</u> (1)	1517		
<u>Platyceras haliotis</u> (1)	1544		
<u>Loxosema elegans</u> (1)	2345		
<u>Loxosema gracilior</u> (1)	2347		
<u>Loxosema gregaria</u> (1)	2349		

CRINOIDS

<u>Marsupiocrinus ceolatus</u> (7)	387	388	390	391
	394	395	405	
<u>Eucalyptocrinus decorus</u> (2)	413	417		
<u>Carpocrinus simplex</u> (1)	431			
<u>Desmidocrinus</u> sp. (2)	436	2145		
<u>Periechocrinus monoliformis</u> (7)	443	2150	2156-	
	2158			
<u>Gissocrinus</u> sp. (6)	471	485	489	493
	505	508		
<u>Enallocrinus scriptus</u> (1)	602			
<u>Botryocrinus decadactylus</u> (1)	527			
<u>Sagenocrinites expansus</u> (3)	553	554	563	
<u>Tennocrinites tuberculatus</u> (1)	551			
<u>Dimerocrinus decadactylus</u> (8)	573	574	577	
	580-583	604		
<u>Lyriocrinus dactylus</u> (1)	587			

CYSTOIDS

<u>Lepadocrinites pentrematoides</u> (1)	347
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The remains of a 150,000,000-year-old crocodile Metrohynchus from the Oxford Clay of Peterborough. Excavation of this crocodile was shown on the BBC TV programme, Blue Peter in April 1985.

A new postcard from Peterborough City Museum and Art Gallery, reproduced by kind permission of the Assistant Curator, Gordon Chancellor.

ROBERT HUNT FRS (1807-1887)

Dr Peter Embrey (Dept of Mineralogy, BM(NH)) comments on the note about Robert Hunt which appeared in the Geol. Curator, 4(3), 129-132 as follows:

'An excellent biography of Robert Hunt by A. Pearson Robert Hunt, FRS (1807-1887) was published in 1976 by the Federation of Old Cornwall Societies (123pp.). This gives a list of his publications in excess of 100 (not counting multiple publication). The second edition of British Mining was published in 1887, the year of Hunt's death, and is probably more widely scattered than the first.'

FRASER COLLECTION SAVED

A short piece in the British Geologist (11/3 1985) is reproduced with permission below:

Following an article by David Bertie in British Geologist (7/3 1981) a rescue operation is underway to save the important Fraser Collection of geological specimens - David Bertie's original article described the

uncertain future of geological collections in British Museums using the Fraser Collection as an example. According to Rosemary Roden, geological curator with the West Midlands Area Museum Service - it was the British Geologist article along with pressure from the Geological Curators Group which "sparked off" the present "rescue curation" which is saving the collection, only just in time, from extinction. Originally the collection contained over 10,000 specimens but due to dispersion some entire sections, such as the minerals collection, have been lost. Rosemary Roden's work therefore consists of a mixture of detective work in tracking down missing sections, sorting and storing recovered specimens, and starting on treatments such as ethanolamine thioglycollate treatment for pyrite decay. The collection is to be housed in a special display room at the Wolverhampton Art Gallery and Museums and help with funding the rescue operation has been given by Tarmac Quarry Products. David Bertie tells us that the moral of this success story is "if you know of a geological collection which is in any danger, let other people know about it. The collection's future may rest literally in your hands if nobody else knows about it".

Bureau de Recherches géologiques et minières,
Département Documentation, Section Echanges,
BP 6009, 45018 Orleans Cedex, France.

Geological Society of London, Burlington House,
Piccadilly, London W1V 0JU

Guntau, Dr. M., Generalsekretar des
Inhigeo-Komitees, Sektion Geschichte Der,
Wilhelm-Pieck Universität, DDR-2500 Rostock,
Rosa-Luxemburg-Strasse 29, East Germany.

Museums Association, 34 Bloomsbury Way, London
WC1A 2SF

Prof Dr. W. Rydzewski, Wrocław University, Museum
of Natural History, Sienkiewicza 21, 50-335
Wrocław

Agent for the Libraries, A.T. Smail, 100 Euston
Street, London NW1 2HQ

Smith, Dr. P.J., Open Earth, 32 St. James Close,
Hanslope, Milton Keynes MK19 7LF

FORTHCOMING MEETINGS

Friday 6 December 1985

The Dudley Experience

GCG Annual General Meeting

Banqueting Suite, Dudley Town Hall, West
Midlands.

The formulation of a collections policy is seen as one of the main issues to which the Group must address itself without delay (Geol. Curator, 4(1), 7). This meeting coincides with the ending of the two year MSC funded Palaeontology Project at Dudley Museum. Much useful and sound work has been accomplished but the long term future of the collection is still in doubt and there remains little or no prospects for the appointment of a permanent geological curator. Using the Dudley experience by way of illustration it is hoped that the main session will yield constructive and objective comment not only to help Dudley in its search for a solution but to aid the Group in formulating its own plan of action.

History of geology in Dudley and
Staffordshire - H.S. Torrens

The Dudley and Midland Geological
Societies - A. Cutler

Dudley Palaeontology Project - J. Round

Collections Workshop - chaired by
P.S. Doughty

12th Annual General Meeting

Contact: Alan Cutler, 21 Primrose Hill,
Wordsley, Stourbridge DY8 5AG.

Thu./Fri. 23/24 January 1986

The Conservation of Geological Materials

British Museum (Natural History)

This conference marks a GCG initiative to promote geological conservation and to set up an international network of geological conservators. The programme covers all aspects of geological conservation and will promote discussion of current techniques and future developments. The support of the British Museum (Natural History), International Centre for the study of the preservation and restoration of cultural property (ICCROM), and the Geological Society of London is gratefully acknowledged. A booking form was distributed with the last

issue of the Geological Curator (vol.4, no.3). Members should return completed forms as soon as possible to the Conference Secretary, Chris Collins, Earth Sciences Section, Leicestershire Museums Service, 96 New Walk, Leicester LE1 6TD. The final programme is summarized below:

Health and safety considerations for
geological conservators - F. Howie
Documentation for geological conservators
J. Cooper
Conservation techniques for smaller museums
M.A. Taylor
Environmental control - J. Ashley-Smith
Use of PEG and epoxy-resins to preserve
waterlogged mammalian remains - M.
Walders
Conservation of sub-fossil bone - A. Doyle
Preparation of invertebrate fossils from
Limestone matrices - J. Wilson
Conservation of minerals - R. Waller
Conservation of palaeobotanical material
M. Collinson
Treatment of decaying pyritiferous material
L. Cornish
Use of consolidants and adhesives in
conservation - S. Keene
Silanes - a general introduction to their
types and uses - S. Bradley
Title to be announced - S. Woods
Chemical preparation of geological material
P. Whybrow

Fri.-Sun. 30 May - 1 June 1986

GCG - Cornish Meeting

Provisional programme is as follows

29 May Arrive
30 May Camborne School of Mines for lectures
on Cornish minerals; visits to King
Edward Mine and East Pool Engine House
31 May Visits to Tolgus Tin, Cligga Head,
and Truro Museum
1 June Visits to Porthmeor Cave, Geevor
Museum and Mill, Botallack; leave.

Costs will be announced in the January issue
of the Geological Curator.

Contact: Lesley Atkinson, Camborne School of
Mines, Redruth, Cornwall.

THE GEOLOGICAL CURATOR

PUBLICATION SCHEME

Three issues of The Geological Curator are published each year; a complete volume consists of nine issues (covering three years) and an index. Because of recent delays in publishing, four issues will be published in both 1985 and 1986 to make up the deficit to members. The following timetable should be noted by those wishing to submit material for publication:

Vol. 4, No. 5 (for 1985) copy date 15th Nov. 1985 for publication Jan. 1986
Vol. 4, No. 6 (for 1985) copy date 14th Feb. 1986 for publication Apr. 1986
Vol. 4, No. 7 (for 1986) copy date 16th May 1986 for publication July 1986
Vol. 4, No. 8 (for 1986) copy date 15th Aug. 1986 for publication Oct. 1986
Vol. 4, No. 9 (for 1986) copy date 14th Nov. 1986 for publication Jan. 1987

NOTES TO AUTHORS

Articles should be submitted typed on good quality paper (A4 size) double spaced, with wide margin. Two copies should be sent to the Editor, Dr P.R. Crowther, Leicestershire Museums Service, 96 New Walk, Leicester LE1 6TD. Line drawings should be prepared in black ink at twice desired publication size. Photographs for halftone reproduction should be printed on glossy paper and submitted at final size. Both drawings and photographs should utilise either the full width of one column (85mm) or two (175mm). References in the text follow the Harvard system i.e. name and date '(Jones 1980)' or 'Jones (1980)'. All references are listed alphabetically at the end of the article and journal abbreviations should follow the World List of Scientific Periodicals where appropriate. Authors will normally receive proofs of text for correction. Reprints can be purchased at cost (details from the Editor). Major articles are refereed.

REGULAR FEATURES

LOST AND FOUND enables requests for information concerning collections and collectors to reach a wide audience. It also contains any responses to such requests from the readership, and thereby provides an invaluable medium for information exchange. All items relating to this column should be sent to Don Steward, Department of Natural History, City Museum and Art Gallery, Bethesda Street, Stoke-on-Trent ST1 4HS (Tel. 0782 29611).

NOTES AND NEWS contains short pieces of topical interest. Tony Cross, Curtis Museum, High Street, Alton, Hampshire GU34 1BA, is pleased to receive items for potential inclusion.

BOOK REVIEWS contains informed opinion on recently published books of particular relevance to geology in museums. The Editor welcomes suggestions of suitable titles for review, and unsolicited reviews can be accepted at his discretion. Publishers should submit books for review to the Editor.

INFORMATION SERIES ON GEOLOGICAL COLLECTION LABELS consists of loose A4 size sheets, issued irregularly, which carry reproductions of specimen labels usually written by a collector of historic importance. The aim of the series is to aid recognition of specimens originating from historically important collections. Contact Ron Cleevely, Department of Palaeontology, British Museum (Natural History), London SW7 5BD

ADVERTISEMENT CHARGES

Full A4 page	£40 per issue)	
Half A4 page	£25 per issue)	Discounts for space bought in three or more issues
Quarter A4 page	£15 per issue)	

Further details from Diana Smith, Castle Museum, Norwich, Norfolk NR1 3JU (Tel. 0603 611277 ext.287).

Inserts such as publishers' 'flyers' can be mailed with issues of The Geological Curator for a fee of £35. 450 copies of any insert should be sent to the Editor by the required copy date shown above.

SUBSCRIPTION CHARGES

UK Personal Membership	£5 per year
Overseas Personal Membership	£7 per year
UK Institutional Membership	£7 per year
Overseas Institutional Membership	£9 per year

All enquiries to the Treasurer/Membership Secretary, Tom Sharpe, Department of Geology, National Museum of Wales, Cathays Park, Cardiff CF1 3NP (Tel. 0222 397951).

BACKNUMBERS

Backnumbers of The Geological Curator (and its predecessor, the Newsletter of the Geological Curators' Group) are available at £2.50 each (or £5.25 for the double-issues Vol. 2, Nos. 9/10 and Vol. 3, Nos. 2/3, including postage. Orders should include payment and be sent to the Treasurer (address above).