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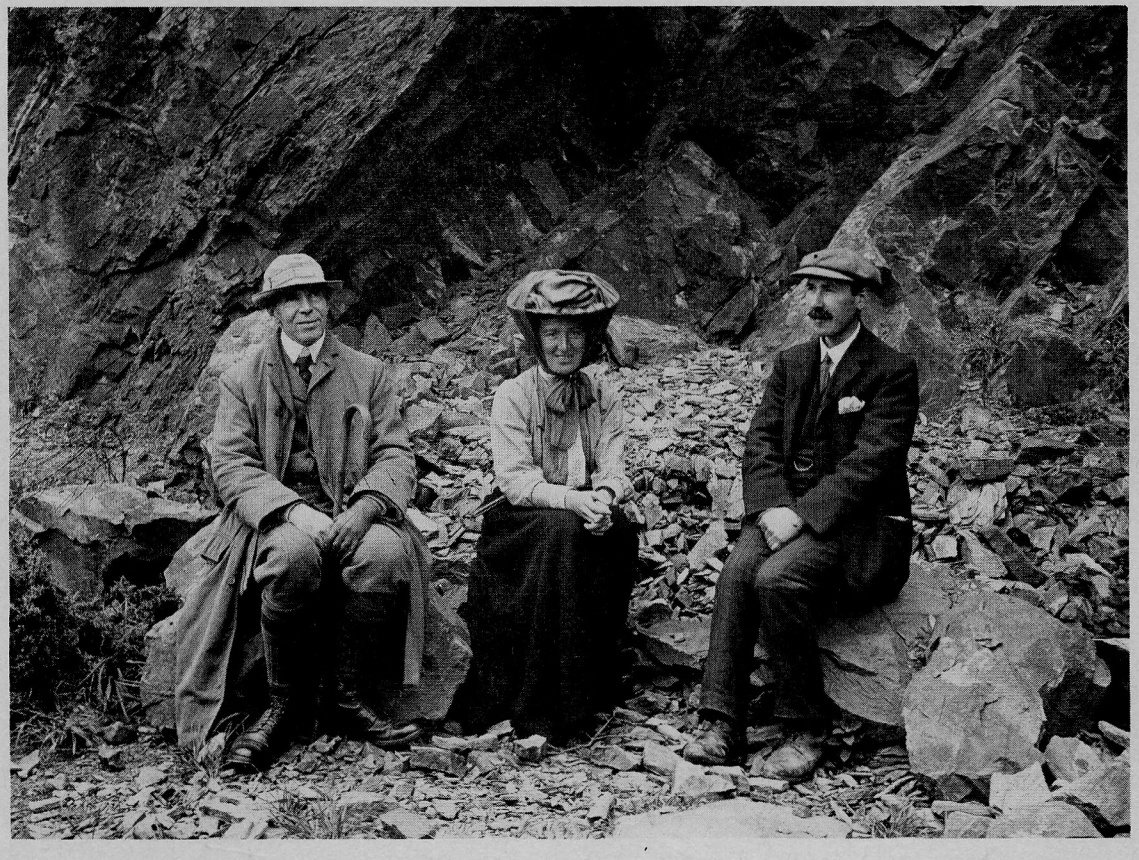

Dr T. Young of Woolacombe (left), Agnes Arber of Cambridge, and Inkerman Rogers (right), in the quarry at Croyde Hoe, Baggy Point, North Devon, September 1910. Photo by E. A. N. Arber. See article inside on Rogers and his collection.

THE GEOLOGICAL CURATOR

SUBMISSION OF MSS

Three issues are published each year. The last dates for submission of copy for publication are:

November 1st.	for first issue of following year
March 1st.	for second issue
August 1st.	for third issue.

Articles should be sent to the editor typed and, if possible, camera ready to the A4 format we use as this may help expedite publication.

COLLECTIONS AND INFORMATION LOST AND FOUND.

All items relating to this section in the Geological Curator should be sent to:

Dr. Hugh S. Torrens, Geology Dept., University of Keele, Keele, Staffs. ST5 5BG. Tel. 0782-621111 Ext. 493.

INFORMATION SERIES ON GEOLOGICAL COLLECTION LABELS

All enquiries and items should be sent to:

Ron. Cleevely, British Museum (Natural History), Cromwell Road, London SW7 5BD. Tel. No. 01-589-6323 ext. 418.

NOTES AND NEWS

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BACKNUMBERS of the Geological Curator (and its predecessor; the Newsletter of the Geological Curators Group) are available at £1.75 each (except vol. 2. Nos. 9/10, and Vol. 3. Nos. 2 & 3 which are £3.50). Prices include the cost of postage. Payment should accompany all orders, which should be sent to John Cooper, Booth Museum of Natural History, 194 Dyke Road, Brighton, BN1 5AA

Typed by Sylvia Robson, Tyne & Wear County Council Museums.

THE GEOLOGICAL CURATOR
Volume 3, No. 4, June 1982

CONTENTS

EDITORIAL

Editors apology.

The last issue of the Geological Curator was printed oversize. However, it can be trimmed without loss by taking 5mm off the top and about 10 mm off the bottom. Side trimming can be accomplished during binding.

NOTE

The publishing and editorial policies of the Geological Curators Group will be published in the next issue of the Geological Curator.

Where do we go from here?

This year has seen the publication of the State and Status of Geology in UK Museums (Geol Soc Miscellaneous Paper No. 13 by Phil Doughty)*. As most of us know the results of the survey are horrendous, but what impact has it had so far both on professional geologists and the public? There has been a response as shown by articles published in such journals as the British Geologist (see article by David Bertie reprinted in this issue of the Geological Curator) and Geology Teaching (Vol. 16, no. 2, 1981; pp 94-96 and 107-108). In the National press there was an article by P.J. Smith published in the Guardian (which is also reprinted in this issue of the Geological Curator). However, these examples of moderate support are not in themselves enough to sustain a basic change of attitude and approach to the well being of our geological heritage. We must strive for more public support and interest. The best medium for effecting this is obviously television. Unfortunately the programme producers are not convinced that 'rocks' can make interesting subjects. Can we geological curators convince them to think differently? What about the superb use of fossils and geological sites in the B.B.C. TV programme Life on Earth? Surely a series using similar techniques, illustrating the story of prehistoric life in Britain would arouse immense interest. Full use could be made of the magnificent local fossil collections in our museums with reference as to how these ancient plants and animals lived and died, where they were discovered (bringing in local sites of geological interest) and who discovered them. One does not have to think very hard to recall many bizarre and fascinating plant and animal fossils which have been discovered in Britain. The giant Cambrian trilobite Paradoxides so well preserved in Pembrokeshire, the superb crinoids, trilobites, corals and

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* State and Status of Geology in U.K. Museums

Since the recent press interest in this report there has been a greater demand for copies than can be met from the Geological Curators' Group allocation. All museums which contributed to the original survey will receive a free copy in the near future if they have not already done so. G.C.G. personal members not in these museums are entitled to one free copy each on application to P.S. Doughty, Department of Geology, Ulster Museum, Belfast BT9 5AB.

Institutions and individuals outside these arrangements may receive copies from the Geological Society of London, Burlington House, Piccadilly, London W1V 0JU price £5.00 (£2.50 to Fellows of the Geological Society) + 25p. p+p.

Copies of the report have been deposited in the libraries of the Museums Association and the Department of Museum Studies, University of Leicester.

other reef-living animals from the Silurian rocks of Dudley and the Welsh Borders. How about the giant 1-2 metre-long Silurian 'sea scorpious' (Eurypterids) the 'seraphim' of the Scottish quarrymen; The spectacular plant fossils from the Carboniferous rocks; ammonites; 'sea dragons' (ichthyosaurs); dinosaurs; the possibilities of our geological heritage are almost endless.

If we could effectively generate interest through television and related media the problems of collection neglect would largely disappear. The upsurge of public interest in archaeology has ensured that funds and resources are available for conservation of associated collections. Now is the time to cultivate the same interest in geology - before the rot of our geological heritage becomes irrecoverable.

'Guidelines'

We must, as a matter of urgency, establish a sound code of practice for geological curation. To this end our chairman, Howard Brunton, discusses in this issue of the Geological Curator a suggested synopsis for a future publication, 'Guidelines for the curation of geological material'. Comments relating to this projected publication would be very welcome. If we can establish a sound basis for minimum curatorial standards it puts us in a much stronger position to offer constructive criticism to those institutions which fail to comply with their curatorial obligations.

ERRATA

Ernest Westlake (1855-1922) geologist and Prehistorian by J.B. Delair.

Geol. Curator Vol 3 no's. 2 & 3, 1981. pp. 133-152

During the technical production of this article the following errors regrettably crept into the printed text. Corrections should be made as under.

p.135 Para. 5, line 5 should read "..... a fact that he was one of two honorary curators ....."

p.143 Para. 1, line 3: replace Dorset with Isle of Wight.

p.146 Lefthand column, line 5 (Gravel & Sand pits section): Dutwick should read as Outwick.

FORTHCOMING MEETINGS AND EXHIBITIONS

VERTEBRATE PALAEONTOLOGY: HISTORY OF COLLECTING AND CURATION 8-9th September, 1982. See Circular with details enclosed with this issue of the Geological Curator.

ANNUAL GENERAL MEETING Friday 10th December, 1982 at the University Museum, Oxford.
Local Secretary: Philip Powell (0865-57467)

DERBYSHIRE
County Council

Museum and Art Gallery
Terrace Road
Buxton SK17 6DJ

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'CAVE HUNTING' A SPECIAL EXHIBITION OF THE LIFE AND WORK OF SIR WILLIAM BOYD DAWKINS & DR. J. WILFRID JACKSON. OPENS MAY 22nd.

Sir William Boyd Dawkins (1837-1929) and Dr. J. Wilfrid Jackson (1880-1978) were both attached to Manchester University in the University Museum and both devoted their lives to the study of animal remains from caves and other archaeological sites. During the course of these two mens' lives, and very much as a result of their work, the study of archaeological remains from caves became established as a specialist science.

Buxton Museum possesses the libraries, correspondence and scientific manuscripts of both Sir William Boyd Dawkins and Dr. J. Wilfrid Jackson, which include letters from a wide range of leading geologists and archaeologists of the day such as Lyell, Darwin, Breuil, Evans, Petrie etc. The extensive archive collections will feature in an exhibition devoted to the geological and archaeological achievements of Dawkins and Jackson, and additionally the 'Boyd Dawkins Room' will be on view, a period style room recreating Dawkins' study at the turn of the century and featuring many items from his own home.

The special 'Cave Hunting' exhibition runs from May 22nd until the end of the year, while the 'Boyd Dawkins Room' will become a permanent establishment of the Museum which can be seen during normal Museum opening hours (Tues, - Friday 9.30 - 5.30, Saturdays. 9.30 - 5.00)

As a part of the special opening of the exhibition, there will be a public evening lecture given on May 21st by Dr. D.A. Roe, entitled 'Studying the Old Stone Age: from Boyd Dawkins to the present day'. The Museum exhibition will remain open until 7 p.m. on that evening.

TOWARDS 'GUIDELINES FOR CURATION OF GEOLOGICAL MATERIALS'

by Howard Brunton

From its origin, in 1974, a principal aim of the Geological Curators Group has been the production of some sort of guidelines for the curation of geological materials. Starts have been made towards achieving this aim on several occasions, but I hope that, with the co-operation of many members, this year (1982) will see the production of a draft document leading to a practical set of 'Guidelines'.

The time is ripe for 'Guidelines' because pressure is being exerted upon the G.C.G., and others, to provide this information. The Museums Association has a project to prepare a 'Manual of Curatorship' which will probably be of a theoretical nature, and bodies like NERC are becoming more aware of the need for responsibility in the curation of scientific materials. However, of paramount importance is the need for curatorial guidelines by those teaching curation to students, whether it be specific museum studies or the introduction to a research project. If practical guidelines to good curation do not exist it is more difficult to point the finger at institutions which offend by their inadequate or non-existent curation of geological materials.

Expected during 1982 is a BM(NH) publication by Croucher & Wooley titled 'Fossils, minerals and rocks: Collection and Preservation'. This will deal with field collecting and initial preparation and preservation of specimens and so can be expected to provide a useful reference in association with G.C.G. 'Guidelines'. 'Guidelines' should be essentially practical in nature, concise and easily used, with full appendices of specific technical information, names, addresses and briefly annotated references. Some or all of the sections might be published in the Geological Curator, inviting comment, before final publication in a loose-leaf format.

Below is a possible 'Introduction' to the 'Guidelines', followed by a suggested list of contents, showing the way in which the guidelines might be divided into sections for easy reference, and the range of topics to be covered. It will be to the credit of the G.C.G. if it can produce a good set of guidelines within the next year or so and I hope that constructive comments on the proposals will be sent to the author for consideration by the 'Guidelines' subcommittee.

GUIDELINES FOR CURATION OF GEOLOGICAL MATERIALS

1. INTRODUCTION

The good curation of specimens starts in the field, at the site of collection, with accurate documentation. These Guidelines will concentrate on the handling, preservation, documentation and storage, including display, of specimens after they have been collected and developed (see Croucher, R. & Wooley, A.R. 1982), and of other geological materials.

Why do we keep geological specimens?

To the casual observer most geological specimens appear hard, durable and easily recollectable. This is not so for the vast majority of specimens. Most are unique, in that the re-collection of something exactly the same would be impossible. It is, therefore, of great importance to preserve specimens with all their collection data and subsequent information in a

condition allowing easy access by research workers both now and in the future.

Some geological localities, especially in the UK, have become so damaged by collecting over many years that collecting is now prohibited. Other localities no longer exist because of building, quarrying, sea erosion, etc., so these can never be sampled. Collections made from such localities are precious and contain the only sources of our geological knowledge of these areas. Other collections were made by expeditions to remote places unlikely to be revisited, or by people who became eminent in their fields, and so those collections contain 'gems' of information which might fuel research activity for decades, or in centuries to come.

Geological specimens - minerals, rock samples, fossils, meteorites or sediment samples - all represent parts of the full geological history of an area. They are usually unrepeatable resources of our scientific heritage; we may not know to what use they will be put in the future, as research techniques evolve, and it is our responsibility to see that the specimens are in safe storage, together with all relevant data, where they will not deteriorate with time. Unfortunately there are many instances of materials remaining in institutions uncurated and deteriorating (Doughty, P.S. 1981), but it is hoped that these 'Guidelines' will provide help in overcoming such problems and in the proper curation of geological materials.

Such curation is not to be undertaken lightly; it is an essential part of all good collecting and research, and specimens must be housed where their continued curation is assured.

GUIDELINES FOR CURATION OF GEOLOGICAL MATERIALS

Contents

3.3. Specimen storage
- 3.3.1. Principles
- 3.3.2. Arrangements of collections, i/c access, uses etc.
- 3.3.3. Storage methods; buildings/rooms/cabinets/racking/boxing, etc.
- 3.3.4. Environmental considerations (see also 4.2)
- 3.3.5. Specialised storage - borehole cores, wet sediments, slides, etc.

4. SPECIMEN TREATMENT

4.1. Preparation.
- 4.1.1. General principles
- 4.1.2. Methods and applications
- 4.1.3. Special preparations - e.g. for chemical analysis, radioactive dating, photography, etc.

4.2. Conservation.
- 4.2.1. General principles
- 4.2.2. Cleaning, equipment, methods and dangers
- 4.2.3. Specimen packing
- 4.2.4. Repair
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5. HAZARDS

5.1. Introduction
- 5.1.1. Materials in store

5.2. Materials on display
- 5.2.1. Handling and transport
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- 5.2.3. Safety Glossary for curators.

6. USES OF COLLECTIONS

6.1. Display, static or travelling (see 5.2.)

6.2. Scientific
- 6.2.1. Access to visitors (see also 3.3.)
- 6.2.2. Loans - ethics and constraints
- 6.2.3. Packing and posting (see also 4.2.)

6.3. Disposal
- 6.3.1. Ethical and legal constraints
- 6.3.2. Documentation
- 6.3.3. Removal to other institutions or individuals
- 6.3.4. Destruction.

Bibliography with brief annotations and references to section numbering.

Appendices
- Basic equipment requirements
- Geological site recording
- Technical and product information - names and addresses, etc.

In conclusion, I would stress that we want these 'Guidelines' to be practical, that is they must be concise and easy to use by the non-expert. Where practical, we want to refer to existing publications for details of techniques and procedures, and whilst the contained information must be sufficient to guide the curator in any particular section, it must not be so voluminous as to deter the reader!

DR. C.H.C. BRUNTON,
Department of Palaeontology,
British Museum (Natural History),
Cromwell Road,
LONDON SW7 5BD

Reference.

DOUGHTY, P.S. 1981. The state and status of geology in United Kingdom Museums. Geol. Soc. Miscellaneous Paper No. 13 (118 pp).

SOME RESPONSES TO THE 'STATE AND STATUS' REPORT

1. BEHIND THE FACADE — GEOLOGICAL COLLECTIONS IN BRITISH MUSEUMS

by David M. Bertie

(reproduced from the British Geologist Vol. 7 No. 3 pp. 80-81, 1981)

DAVID M. BERTIE, who worked as Faculty Administrative Assistant in the Faculty of Engineering at Wolverhampton Polytechnic until December 1980, is now employed by GECO Geophysical Company of Norway. In this article he describes some of the problems facing geological collections in British museums today.

Has it ever occurred to you to visit the Fraser Geological Collection in Wolverhampton, just out of simple curiosity? Or have you ever thought that the Fraser Collection's large Tertiary bivalve section or its valuable Wren's Nest material might merit some comparative study with other collections? If so, you would now be too late, for it would appear that the Fraser Collection no longer exists. Philip Doughty, Keeper of Geology at Ulster Museum, recently carried out a survey of geological collections in the UK. (* *see footnote.*) The three local authority museums in Wolverhampton professed complete ignorance as to the existence of any geological collections in the borough. The disappearance of the Fraser Collection is not an isolated case. The Geological Curators' Group have reported a number of other collections which have vanished without trace, or have decayed or have been neglected such that no documentation on the collection survives. The Group has been aware of this kind of problem for some time but the full scale of the situation only became apparent after Doughty's survey. At the Museums Association's 1980 Conference Doughty summed up the situation as follows:

"The report reveals a frightening picture of the material heritage of the science of geology in the museums of the UK. It exposes a situation of disorder, neglect, mismanagement and decay on an unsuspected scale, with a mere handful of curators, lacking any formal professional cohesion, struggling, in general ineffectually, in the face of impossible odds. The odds are represented by some 20-30 million geological specimens housed in a little under 300 museums spread widely throughout the UK. Only 46 of these museums employ full-time geological staff. Primitive curatorial arrangements exist for a further 51, but they do not involve professional geologists. A staggering 65 per cent of geological collections have no formal curatorial arrangements of any kind, and about half the nation's major collections outside the national museums fall into this group. This mass of geological materials, perhaps the most important single national geological resource in the world, should be a source of pride and a spring of scientific stimulation to the whole nation. Almost all of it is in public ownership in the Institute of Geological Sciences, The British Museum (Natural History), other national museums, the local authority museums and the university museums. In reality it does not exist as a national resource at all, and with over half the museums admitting that they have dirty material, and a third that parts of their collections are in decay, it seems highly unlikely that much of it will survive to become part of one. It exists as hundreds, perhaps thousands, of collections isolated geographically, professionally and organizationally, and in terms of public awareness almost all of these collections might not exist. Undoubtedly very large parts of the heritage remain, but the condition of the specimens, and equally, of the information relating to them, is endangered in almost all directions.

"A lack of curatorial care appears to be the fundamental factor in all these ills. Without informed curation the physical state of specimens may not be maintained. Delicate minerals and fossils are frequently mishandled, damaged and bruised, reducing their scientific and financial worth. Dirt is allowed to penetrate material which is unavoidably damaged in the cleaning process; specimens are stored in environments lacking even the crudest atmospheric control, laying them open to chemical and biological attack. The survey shows that most original information about specimens is in the form of labels on or with specimens and in poor storage conditions chemically unstable papers disintegrate, pigments fade, and fungal attack can render the best quality labels worthless. Without this documentation specimens become almost useless scientifically and the interests and aspirations of the collector and the community he sought to serve are betrayed."

It is against this background that the problems facing type specimens, in particular, have to be seen. Any museum holding type specimens has, in effect, committed itself to the ultimate curatorial obligation and the highest academic standards. But of 64 museums holding type specimens, only 29 have curatorial staff. There are therefore 35 museums, with fossil type material, not professionally equipped to discharge their responsibilities to the scientific community. While some of the university museums are among the most professional museums encountered, they also include some of the worst, and the safety of collections accumulated as a result of research is not always ensured. Faced with this situation the Geological Curators' Group is seeking a meeting with NERC representatives to press the case

Footnote: * *(Doughty's full report is shortly to be published by the Geological Society of London as Miscellaneous Paper No. 13).*

for proper curation and storage of collections amassed during the course of NERC-funded research.

This, then, is the frightening picture lying behind the public image of the apparently placid facade of local authority museums, a public image dominated and diverted by the blockbuster exhibitions at the British Museum (Natural History) and the Institute of Geological Sciences. The very valid question may be asked as to how the situation of neglect or disappearance of collections arises. The history of Wolverhampton's Fraser Collection provides an insight into the problems facing collections which are in local authority hands.

THE FRASER COLLECTION — EXTINCT, EXTANT OR MORIBUND?

Fraser was a late nineteenth-century collector who left his collection to Wolverhampton when he died. The collection was initially exhibited in the Wolverhampton Art Gallery, but pressure for space led to the collection being transferred to the Technical College. Since no curatorial responsibility was specifically demanded of the college, the well-being of the collection depended on the interest of individual staff members. By the late 1960's decay had already set in on a large scale due to non-return of borrowed specimens, theft, physical damage resulting from several moves and chemical rot as a result of poor curation. Increasing pressure on limited teaching space, following the creation of the Polytechnic, led to the bulk of the collection being bundled into sacks and boxes and moved out of Wolverhampton to Himley Hall near Dudley. Since the mid-1970's the development of a Geology module in the Geography course has resulted in some of the best specimens being brought back to Wolverhampton for use as teaching material.

So, unknown to the three local authority museums, the Fraser Collection still exists, but in terms of accessibility and well-kept specimens the collection has as good as disappeared. The Fraser Collection today is in a very dismal state. Many specimens are in tea-chests and sacks — unwrapped — in damp attics and damper cellars in Himley Hall. A number of glass cabinets, which provided some security for a large Tertiary bivalve collection, were removed as recently as September 1980 because the space they occupied was required for other purposes. The bivalve collection is now in a totally insecure location and theft is a very real possibility. The full extent of the Fraser Collection, as it survives, is completely unknown. An old handwritten catalogue exists, but the collection requires complete re-cataloguing and re-classification — a job which can only be carried out by a geologist who can identify un-labelled specimens. But this task can only be carried out if the collection is re-housed in a permanent home either in the Polytechnic or somewhere in Wolverhampton, and therein lies the tragedy.

In the last issue of *British Geologist* (7/2, p.34), John Knill pointed out the problems facing British universities as a result of Government policies. Polytechnics are even more at the mercy of local authorities whose funding is also dependent on Government policy but whose use of funds depends on the current political composition of the local authority. Pressure is placed on polytechnics to demonstrate "results" within a political term or they are among the first areas to suffer cutbacks, with the result that long-term planning becomes almost an impossibility. At Wolverhampton Polytechnic the situation is one of six faculties plus central administration all scrambling for larger slices of an ever-dwindling cake. Since no major part of the Polytechnic has any interest in the Fraser Collection (the Geography section merely forms part of the Arts Dept. in the Humanities Faculty) all suggestions for the rehabilitation of the collection get lost in the political infighting for funds and teaching space. The very least requirement of the collection is a room on the Polytechnic's main site for the permanent and sole use of the collection and where it can be securely stored. Given this, the job of re-cataloguing and reclassification could be carried out comparatively easily. Transference of the collection back to one of the local authority museums would not change the present outlook; none of the museums hold geological collections, there are no geological curatorial staff and the museums are under pressure from spending cuts.

THE LOSS OF A NATION'S HERITAGE

The story of the Fraser Collection is just one instance of the neglect of geological collections in the UK. There is a growing awareness that geological sites require conservation or they may disappear through over-collection or in-filling. The collections which came from these sites should therefore receive a very high priority in conservation, particularly those collections from sites no longer collectable. By its very nature, Geology depends on the availability of hand-specimens in teaching, preferably supplemented by good type collections; in palaeontology this need is paramount and type specimens require special curation. Geological collections are not a resource we can afford to passively let drift into oblivion.

Doughty has said that "it is not merely an etymological quibble that the scientific content of the nation's heritage is overlorded by a Minister for the Arts." Substantial sums of money are spent on the arts each year, largely in minority interest areas; by contrast, scientists are commonly misrepresented as self-interested beings with no thought for the community, as witness the public hammering in the Press of Government geologists last year as a result of the nuclear waste-disposal test-drilling programme. Proper Government recognition of the place of science in the cultural life of the nation is still awaited. The 49 years of efforts of the Standing Commission on Museums and Art Galleries has failed to prevent the growing decay of geological collections. Other museum interests are also suffering, if not so glaringly, and various aspects of the whole problem were outlined in a series of papers read at the Museums Association's 1980 Conference.

To redress the neglect of decades will require positive action on the part of the Government, since the present permissive legislation relating to museums is ineffectual in providing any solutions. At the very least, the following recommendations should be established: legislation defining museums, their functions and responsibilities and minimum standards of curation; the establishment of an agency of DES with practising curators on its Council to establish the contents of all UK museums in conformity with the preceding legislation. Such an agency should possess financial powers, similar to those of the UGC, since without this kind of backing, local authority collections will continue to be at the mercy of changes in local authority political composition.

If nothing is done, the *status quo* will not be maintained. Outside the national museums the nation's heritage is undergoing rapid deterioration on a grand scale.

SOME RESPONSES TO THE 'STATE AND STATUS' REPORT

2. NATIONAL LEGACY ON THE ROCKS

by Peter J. Smith

(from The Guardian, Thursday February 25, 1982, p. 19)

Geology is a science largely created and defined by the British during the last 150 years. You would never guess that from the state of the nation's collections, writes Peter J. Smith.

WHEN Roderick Murchison was appointed Director General of the Geological Survey in 1855, the announcement was greeted with cheers in the House of Commons. When he died in 1871, his coffin was accompanied to the graveside by no less a person than the Prime Minister. For geology, a science largely of British creation, it was a golden age in which some familiarity with the earth's history was essential for anyone with cultural aspirations and in which geological developments were widely followed by the educated public.

By contrast, the cultural impact of geology and geologists in political and general circles today is practically nil, even though the earth sciences are far more important to the economic health of the nation than ever before. Local debating societies, literary magazines and pillars of the church no longer get excited about the latest discoveries and their philosophical implications, and Members of Parliament no longer extol the muscular virtues of geological fieldwork.

Yet much of cultural value remains of the past century and a half of British geological achievement. On the abstract level, the subject is replete with words, names, concepts and theories of British origin. And on the material plane, our museums are well endowed with rocks, minerals and fossils, some of which are physical survivals of past intellectual quests, and thus of historical interest, but not a few of which are still of considerable scientific value.

Unfortunately, however, much of this remarkable legacy is in a state of utter disorganisation. There is no central register of the whereabouts of even the most important specimens. Neither is there any agency of central or local government with the responsibility for gathering such information and for disseminating it, either to professional scientists who may wish to use the specimens or to a general public with a potential cultural interest.

Nor is there any obvious concern for this sad state of affairs within the Museums Association (92 years old), the Standing Commission on Museums and Galleries (50), or the more recently formed Area Museums Councils. The picture, in short, is one of "neglect, dissipation, indifference and mismanagement."

Or so concludes P. S. Doughty, the Keeper of Geology at Ulster Museum, who has just produced a report on the subject for the Geological Curators' Group. This Group was founded in 1974, precisely because a number of geological curators were aware of the disarray of their science in museums; and Doughty's survey demonstrates just how right they were.

There are about 280 provincial and non-national London museums with geological collections, a third of which hold more than 5,000 specimens. About 150 of these museums have collections of major importance, including many brought together and presented by named individuals. At a conservative estimate, the total number of specimens involved is at least three million, and could be several times greater.

Moreover, 64 of these museums hold type specimens, which raises their responsibilities well above the merely provincial. A type specimen is the first of a particular type of fossil to be discovered, named and described. As such, it becomes the standard of comparison for similar material subsequently discovered anywhere in the world and thus of major importance to international geology. Indeed, Doughty goes as far as to claim that "hardly any other museum objects, no matter how valuable or select, place such solemn obligations on curators."

Yet 55 per cent of the type specimen repositories have no qualified geological staff. More generally, 84 per cent of the 280 museums employ no full-time geological curator, and that includes 50 per cent of museums with particularly large and scientifically important collections. Even worse, the geological collections in 65 per cent of museums have no curator at all, qualified or not.

Under these circumstances, it is hardly surprising that many collections are in a mess, in more ways than one. Fewer than 50 per cent of museums have scientifically useful information with more than half of their specimens; and where information is available, it is most commonly in the form of specimen labels subject to paper disintegration, pigment fading and fungal attack.

Although half the museums have a register or index of most or all of their collections, fewer than 10 per cent issue printed catalogues and 15 per cent have no documentation of any kind. But then perhaps there's no point, for half the museums store some of their specimens in cardboard boxes and 14 per cent of them use nothing else.

As a result, half the museums have to admit that some of their specimens are dirty and at risk, whilst a third have specimens that are rapidly deteriorating physically and chemically. It all presents, as Doughty puts it, "a frightening picture of the material heritage of the science of geology as represented in the museums of the United Kingdom . . . a situation of disorder, neglect, mismanagement and decay on an unsuspected scale."

And not least at fault are the university museums, if only because institutions of higher education are supposed to be centres of enlightenment. The 38 university geology departments in the survey contain some of the most professionally run museums in existence; but they also include some of the worst, and the majority fail to meet basic standards.

For example, fewer than half of them have curators, and where curators do exist they usually hold their positions as secondary responsibilities. Moreover, there is often little continuity of interest, the time and resources devoted to a university collection being largely dependent upon the whims of the departmental head of the day.

So who or what is to blame? Lack of foresight by everyone imaginable was the chief mistake. Responsibility for the scientific collections in the non-national museums was neither requested by, nor given to, any of the national science bodies. Museums are, in fact, the responsibility of the Minister for the Arts; but 'science" is not "arts" and 50 scientific collections have inevitably fallen into a political crevasse.

The more general problem is that almost everyone has forgotten that science should have, as it once did have, a place in the cultural life of the nation. On the one hand, culture has come to be synonymous with the arts; and on the other, science has come to be regarded as entirely a matter of research. The result is that the cultural

aspects of science have little public representation and even less public financial support.

Meanwhile, to get back to specifics, many of our geological collections are rapidly decaying; and a national resource that should be a source of pride and a cultural and scientific inspiration is no longer any of these things. It exists as hundreds of collections isolated geographically, professionally and organisationally, which means that in terms of public awareness most of it might as well not be there at all.

Unfortunately, permissive legislation has allowed local authorities to establish museums in a spirit of local pride but without insisting on even rudimentary safeguards for the collections within them. Thus local government committees, with an eye to short-term results in the cultural field, have often been able to press museum staff to spend time and money on exhibitions, lectures and other "educational" activities whilst ignoring the politically less attractive job of providing for their museums' basic curatorial role.

So the first priority, says Doughty, is legislation, to define the functions and responsibilities of museums, to set minimum standards of curatorial care, and to frame a national plan for museum development. Ultimately, more money will be required, but legislation is urgent simply to prevent the misdirection of existing resources.

The problem is an old one; only the context is new. When it comes to conserving a part of our heritage, to do nothing is not to maintain the status quo, for "the existing situation is one of rapid deterioration on a grand scale."

SOME THOUGHTS ON METHODS FOR CLASSIFYING AND CATALOGUING HAND-WRITING COLLECTIONS

by R. J. Cleevely

INTRODUCTION.

When discussing hand-writing styles and their comparison in the introduction to the series on Collection Labels (see Geol. Curator, Vol. 3, Nos. 2 & 3 p.77),

I suggested that examples might be classified according to their "calligraphic style". Having investigated the matter further, that suggestion would seem to be both in-accurate and impractical. On referring to readily available popular literature, one soon realises that the aspects of hand-writing that are of general interest are calligraphy and graphology, neither of which are directly applicable to our particular problem of identification. Calligraphy is defined as the art of hand-writing and reached its height in Mediaeval manuscripts, or the decorative Arabic inscriptions that are a major feature of Islamic art. Graphology is the composite art and science (? system rather than science) of studying a human-being's character from his hand-writing; in some ways it is often felt that graphology falls into the same category as astrology. However, both of these fields recognise that hand-writing is something unmistakeable, unique and individual, which is the basis of many legal and monetary systems and our own particular usage of identifying particular collector's labels.

The details given in the two basic manuals on calligraphy and graphology (listed in the bibliography), which relate to the construction and art of writing on the one hand, and the interpretation of the styles in the other, -- are relevant to the purpose of recognition and identification. Fairbank (1978), in his introduction states that 'hand-writing is a functional thing; it is intended for communicating and recording thoughts, requests etc.' He commented that legibility is therefore an essential quality, but also pointed out that by expressing personality it has a further value; -- we look for more than legibility in hand-writing as it has inimitable style, and indicates the craftmanship and education of the writer.

Classification of hand-writing according to style

The examination of my suggestion to classify examples of hand-writing into particular categories based on styles is found to be somewhat un-satisfactory

when applied in practice. Although, ideal in theory and seemingly producing a series of readily identifiable units, its application was realised to be entirely dependent upon the interpretation of particular categories. Those that immediately came to mind: Large/ Small; Strong/ Weak; Broad/ Thin: Spidery, or Shaky/Copperplate/ Italic/ Print-formed; Round/ Angular etc., are really too generalized and subjective. They might be acceptable, if a single user was always involved, but with more than one person applying interpretations of these categories different placings would inevitably result. Views as to the nature of letters, their size, their curvature etc., will obviously vary from each interpreter and may even change upon different occasions of application by the same user. The reason for this is that the margins between the categories are blurred and the inclusion of a particular example into any one of them will vary according to interpretation, or the selection of the paramount features, by the classifier. Another point to always bear in mind, is that the hand-writing style of the writer also varies considerably and is dependent upon the occasion, his mood, or the social purpose in which, or for which it is produced.

Having disposed of that idea, it was necessary to re-examine other possibilities. Using the rich Archives of the BM(NH) as our raw material, we sought the advice of the Home Office Forensic Science Hand-writing Division. Apparently, this particular aspect of identifying hand-writing according to style has not been explored and we learnt that a precise classification does not exist, nor was there any relevant published literature. However, inspection of a series of letters soon revealed that despite the broad range of styles occurring, the methods used by the Home Office were equally applicable to our own purpose.

One of the first steps they adopt in identifying the style of a particular individual is to look at the general lay-out of a piece of writing. Arising out of education and social background the manner in which we write and utilise paper etc. is consistent and can characterise each individual.

Useful Features for the Classification of Hand-writing

A. General Lay-out.

1. The Use of a sheet of paper.
   Features to observe are:
   a. the Margin habit: is it consistent?; does it vary back and forth?; note standard width.
   b. the Alignment of the writing; does it proceed straight across?; does it wander up and down?;
   c. if Lined Paper: are the lines rigidly adhered to?; or completely disregarded?

2. Hand-writing.
   d. The angle of slope: is it forwards; backwards; erect; consistent?
   e. The amount of pressure used.

3. Style.
   f. Word-spacing: is there consistency in? anything unusual and repeated?
   g. are any Words joined together? is this frequent?; the same words?
   h. The use of paragraphs: is it correct?; according to past, or present practice?; grammatical, or social, or purely personal?

i. Punctuation: again note whether accurate?; past, or present; personal; consistent?; use of dots, dashes, commas, colons, full stops, exclamation marks -- note style. Any distinctive peculiarities, or lapses?

j. the style of dating adopted: note the sequence used: day, date, month, year; method of giving year, with, or without century prefix.

4. Materials.

k. Ink used: ? colour preference; colour state; fading indicative of age.

l. Recognition of type of pen used: quill; biro; fountain; etc.

5. Social.

m. Hand-writing style. This may provide an indication of nationality (if not apparent from content); or age.

n. Etiquette. Can provide information on status and social background as well as period.

o. Type of stationery. This too may be helpful in establishing period, social level etc., in particular instances (e.g. the 19th century custom of black bordered paper), it could assist in dating correspondence, if the writer is identified and his history known.

When dealing with letters, much of the content itself, or its mode of presentation will convey substantial information concerning the writer. Although many of the features listed above are seldom available to us when dealing with collection labels, aspects of general lay-out and writing can still be diagnostic.

Although features of the general lay-out may prove to be sufficent for identifying, or classifying a writer -- a more distinctive method of recognition can be achieved by concentrating on the methods utilised to form particular letters.

B. FORMATION OF LETTERS

This approach may be divided into:-

1) the formation and construction of particular letters.
2) the proportion of the parts of letters i.e. the downstrokes and shapes to one another, or in each letter and the patterns that ensue.

In 1 (above) it is usually sufficient to restrict observations to the letters d; e; k; p; r; s; x; although f; t; n/m; w; are also useful.

In this context, it is worth noting the existence of the civil service 's' and its degenerative forms; and also usage of the Greek 'd' and 'e'.

The main points to note in recognising the formation of a letter are given in the summary 'Identification of hand-writing' appended but are essentially those that relate to 'pen-manship':

1. Formation of letter

Points to note:
- a. the movement of the stroke.
- b. the number of separate strokes used.
- c. the type of stroke.
- d. the extent of curve/loop/stroke, i.e. height.
- e. the nature/shape of curve/loop/stroke.
- f. execution of letter, i.e. precise/sloppy/etc.,

2. Letter Relationship

Evaluation of such relationships can be obtained by noting:
- a. the height of strokes/loops and comparison with others.
- b. position of loops/changes of directions e.g. 'o'.
- c. nature and height of cross strokes, e.g. letter 't'.
- d. width of letters/curves.
- e. links and paired instances of above.

3. Other features

i) Capital letters provide significant indications of a writer's style; their formation and decoration is very frequently quite invidualistic.

ii) the formation of figures is another feature that can yield diagnostic characters; in particular by a comparison of the relationship of their parts e.g. '8' is formed by top and bottom circles which may be equal, or disproportionate to one another.

Various facets relating to an understanding of letters formation and the recognition of types can be gleaned from Diringer (1977) A History of the Alphabet, in particular the section on the history of the Latin letter. The structure of letters and their evolution is also discussed in a chapter on the emergence of the alphabet in Jackson (1981)

Application of handwriting analysis to letters and labels of geological collectors.

Applying these features to both letters and labels in the various BM(NH) collections, it was possible to distinguish particular writers. It was felt that individuals could be recognised consistently and that some attempt should be made towards testing the application of these characters into formulating the basis of a classification. The next step is to produce a diagnostic summary for each particular hand-writing example in a test series (whether letter, or label) by selecting some 10-15 features relating to its general style, lay-out, or letter formation. The production of such lists, or summaries would refine the nomenclature to be attributed to the categories used. Finally, the scheme used to classify the material could be re-evaluated by applying it to other examples and gauging whether it still worked once the field had been enlarged. The principal and critical task is to recognise and devise a precise series of formed letters that is capable of being accurately applied by every user of the classification. This is best achieved by depicting the letter and its derivitives together with a description of their formation in calligraphic terminology.

Until the classification has been evolved, we are still compelled to rely upon our visual comparative methods of establishing the identity or similarity of a written label.

APPENDIX

Points to consider in the identification of hand-writing.

General Style -
- i) Degree of Control
- ii) Nature of Style
- iii) Degree of Legibility
- iv) Nature of the Units: Letters; Words; Lines
- v) Alignment
- vi) Sense of Unity: Separation of Letters
  Word Spacing
  Rhythm & Regularity
  Pattern.
- vii) Use of Paper & Arrangement

Pen-manship:

Letters: Size; Width; Height; Variation
Angulation; Curvature
Direction of Slope
Decoration

Hand-Pressure: Strong; Weak; Impressed
Movement & Direction: Clockwise/Counter-clockwise
Formation of Letters: Downward strokes/Upward strokes
Diagonal strokes
Horizontal strokes
Breaks in Letters
Joins

Style of Capitals

Punctuation: Nature of
Consistency of
Idiosyncracies
Correct Grammatical usage

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EDWARD CHARLESWORTH & THE BRITISH NATURAL HISTORY SOCIETY
4. MATERIAL IN THE HANCOCK MUSEUM, NEWCASTLE UPON TYNE

by Susan Nelson & A. M. Tynan

Recent articles in the Geological Curator,(Vol, 3. No's. 2 & 3 pp. 88-119) stirred a twenty-year old memory in one of us, and sent the other back to look again at a series of little dark red boxes, some with oval green labels. York, one should explain was the home town of one of us (AMT) and the Yorkshire Museum the birth-site of his museum career, nearly one hundred years after the Keepership era of Edward Charlesworth. Small wonder that a label embossed "British Natural-History Society York (what an odd place for a hyphen) should excite albeit en passant, his interest. There were, however in Newcastle more urgent tasks and the matter was shelved. We are grateful to Barbara Pyrah, Mr. Crane and Messrs. Cleevely and Cooper for re-awakening the interest.

For the record, here is a description of the Charlesworth material in the Hancock Museum.

1. a set of 40 tiny Tertiary Molluscs mounted in 'lantern slides', as illustrated on p.98 (ibid)

2. 134 card boxes holding either individual specimens, or tiny glass phials, capped with red wax containing even tinier specimens. These represent 108 'Charlesworth' species (ibid esp. p. 109), 24 duplicates and two triplicates. The boxes fall into four groups.
    1. 'small, i.e. 2" x 1¾" x ¾" with oval green BNHS labels; these have black-ink manuscript numbers. 31 boxes.
    2. 'small', as in 1 (above) but with plain green circular labels (¾" diam) with numbers as in 1 (above). 50 boxes.
    3. "Large, shallow" i.e. 3" x 1⅞" x ¾" with oval green BNHS labels as in 1 (above). 36 boxes.
    4. 'Large deep' i.e. 3" x 1⅞" x 1⅜" with oval green BNHS labels as in 1 (above)
    (all measurements of the lids)

It is worth noting that four of these large deep boxes had a manilla-coloured panel almost covering the top of the lid, and that throughout the whole series there are sub-groups which may be up to ⅛" less or more in length or breadth, but seldom in depth. Those of us who have tried to obtain an exact repeat order of such boxes or trays will be able to sympathise with Edward Charlesworth.

Perhaps more interesting was the survival with the boxes of a printed "List of Tertiary Fossils from Barton. Hoodwell and The Isle of Wight, specimens of which have been distributed by the British Natural-History Society".

In most respects this looks very like the list figured on p.105 Geol. Curator (Vol. 3. No's. 2 & 3. p.105. fig.3) except that it is dated March 1850 and although 162 fossils are listed in the first selection, there is room for 84 in the left-hand column. One assumes that this was to make space for longer 'Supplementary Lists' which included specimens marked 'a' to 'z', "aa" to "zz" and in this case 'a1', to 'a6', otherwise so far as one can

see, the layout described is similar to the figured list dated November 1850 (Geol. Curator vol. 3. p.105). It is interesting that apparently a reprint of the March 1850 list was needed by November, and could reflect the successful expansion of the business.

Examination of the Minute Book of the Committee of the Natural History Society of Northumberland, Durham and Newcastle upon Tyne (owners of the Hancock Museum and now the NHS of Northumbria) reveals some interesting details. In a minute dated Nov. 5th 1850, it was resolved to spend £2.10.0 on a set of 20 minute Tertiary fossils as mounted by Mr. Charlesworth of York. In fact there are, as previously listed, forty such "lantern slides", but no obvious explanation for the double ration, only 20 are reported at the Society's 'Anniversary' meeting of August 5th, 1851. In the report for the year 1857-1858 it is reported that Mr. Charlesworth had worked on the Tertiary fossils in the collection and had offered to draw up a report on the whole collection for a 'modest remuneration'.

A committee meeting of 31st March 1859 agreed to pay Charlesworth £9.18.0, presumably for this report. It does not seem to have survived in the archives. They also agreed to pay £10.0.0. for fossils from the Chalk, but only the smaller sum appears in the accounts for that year. It is interesting that the Committee should employ a foreigner to report on their collections of fossils at a time when they were not altogether devoid of talent in that area. He must have established something of a reputation. In 1857 moreover he was still employed as Keeper of the Yorkshire Museum. Two years after his retirement the Committee (June 23rd 1860) considered an offer from Charlesworth to complete the work on the Chalk, and other Cretaceous fossils for £30, they offer £25. The Anniversary meeting, held on December 28th 1860 received the Treasurer's report which was for the financial year ending July 31st, 1860, hardly six weeks after the Committee meeting. It reports the payment of £25 to Charlesworth for arranging fossils. Quick work. A year later the work appears in the text of the Anniversary report (Nov. 26th 1861) thus "The Collection of fossils from the Chalk and earth formations has been largely increased and the specimens remounted and named by Mr. Charlesworth and a series of fossils from the Permian Rocks of Durham has been ordered, which when completed will worthily represent this interesting local formation".

In the Treasurers statement, Charlesworth received another £5.5.0. So he got his thirty pounds, and a five shilling bonus. There is no sign that the Permian fossils were ever received. This was another indication of the regard with which Charlesworth was held by the Committee, it was understandable that he should be hired to provide fossils from the deep south, but to have the man collecting fossils from the Permian, on their doorstep and then paying him money for them was, to say the least, remarkable. James W. Kirkby, (1834-1901) for instance, a young mining engineer from Sunderland, was at that time working on the fossils of the Permian, he was related to the Hancocks and a protege of the Curator, Richard Howse, (1821-1901), himself no mean investigator and collector from the Permian, who had published 'A catalogue of the fossils of the Permian system of the Counties of Northumberland and Durham' (1848, 46pp).

There is no doubt that Edward Charlesworth must have been quite a salesman. Maybe, however local enthusiasms developed to swell the Collections, whatsoever be the explanation, the name of Edward Charlesworth disappears from the Society's records on November 26th 1861.

Acknowledgments.

The authors are grateful to Mrs. G. Hickling Hon. Sec. of the NHS of Northumbria for access to the early minute book of the Society

March, 1982.

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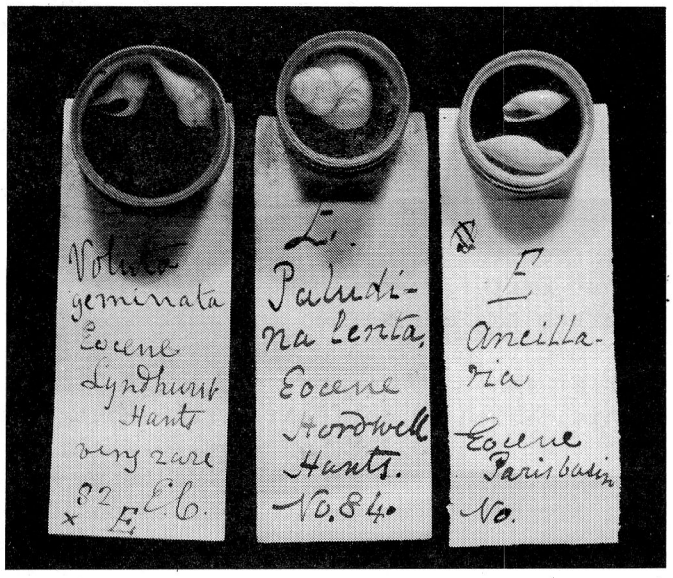
EDWARD CHARLESWORTH (1813-1893): MATERIAL IN THE CITY OF BRISTOL MUSEUM & ART GALLERY – A POSTSCRIPT

I would like to take the opportunity to correct the impression given by the title of my recently published note on Charlesworth (The Geological Curator, 3(2&3):93-8), that all the material described therein derives from the British Natural History Society. The note was intended only to give some indication of the material with Charlesworth associations acquired by this institution and was submitted under a more general title.

Since the publication of that article we have noted further numbered series of Charlesworth material in our collection. These were donated by Dr. W.A. Smith in 1932 (accession no. 7675). None carries any indication of having derived from the British Natural History Society. Many of the specimens are still in what we assume to be the original black-and-white glass-topped 'pill-boxes' to which Charlesworth's hand-written labels are glued.



Charlesworth's handwritten descriptions of the series are also extant. One reads

> "Eocene Mollusca/of the Paris basin/24 Genera including/and [deleted] about 36 speci/mens E.C."

and the other

> "E. 20 species/35 specimens/a x on the tabel (sic) signifies/that the fossil cannot be/purchased in the ordinary/way of Dealers. E.C."

Most of the material which has been located so far is from the Eocene. Localities include Lyndhurst, Sheppey, Hordwell, Lewisham railway cutting, Highgate and the Paris Basin. All of these labels are marked with an "E".

Several Wealden specimens from Potton, Bedfordshire are present, together with specimens in "Wealden matrix" from Sussex. These labels are (with one exception) marked "I".

A single specimen from the Carboniferous Limestone of Lancashire is accompanied by a label marked "P".

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THE BIDEFORD MUSEUM GEOLOGICAL COLLECTION OF INKERMAN ROGERS (1866-1959)

by Muriel A. Arber

Bideford Museum and the Royal Albert Memorial Museum, Exeter

The Museum at Bideford, in North Devon, included a geological collection of nearly 700 fossils, rock specimens and worked flints, the majority of which were collected in North Devon by Inkerman Rogers (Fig. 1.). He had himself arranged and curated them; they are labelled in his beautiful handwriting, an example of which is shown in Fig. 2.

When local government was reorganized in the 1970s, Torridge District Council took over the Museum, and as the Library needed to expand into the space which it had occupied, the geological collection was packed up and put into the care of the North Devon Museum Trust. The Trust hopes some day to be able to open a central museum of North Devon, in which geology would be included, but at present it has only a Maritime Museum and a Farm Museum, so the geological collection was put in store at the Maritime Museum, Odun House in Appledore. I was asked to advise on what should be done with it, and in the summers of 1978 and 1979 I made an inventory of the specimens and wrote a report on them for the Trust. I was considering what to suggest when I discovered that Stephen Locke, then Director of the Royal Albert Memorial Museum at Exeter, had already offered Torridge District Council to house and curate the collection and make it available to students, under a formal loan agreement, until such time as there is a suitable museum in North Devon to which it can be returned. Torridge District Council eventually agreed to this, which is an ideal arrangement, especially as there is strong local feeling that the collection should remain in Devon. On October 30th 1981, it was transferred from Odun House at Appledore to Exeter Museum by the Director, Stephen Locke, and the Assistant Curator of Natural History, David Bolton. There the specimens are now in the care of the Curator of Natural History, K.J. Boot, who is cataloguing and storing them, as an integral collection, so that anyone who is interested can examine them by appointment.

The condition of the Bideford collection

Kelvin Boot has kindly provided a photograph (Fig. 3) of the boxes containing the collection during his preliminary unpacking and checking with my lists. Before the specimens were handed over to the North Devon Museum Trust, the staff at Bideford had packed them in fifteen boxes, and one large display tablet was separately wrapped. My inventory had to be made under the names which the boxes happened to bear, such as Corned Beef, Nestle's Milk and Haig's Gold Label. Most of the specimens had been wrapped, together with the tablets which bore their labels, in newspaper, though some were in plastic bags. In the display cases in Bideford Museum, Rogers had mounted most of the specimens between pins stuck into the tablets, and in the course of packing many of the pins had fallen out, while other specimens had worked loose. Most of the tablets bore numbers, and there were numbers on many of the specimens, but these were not always

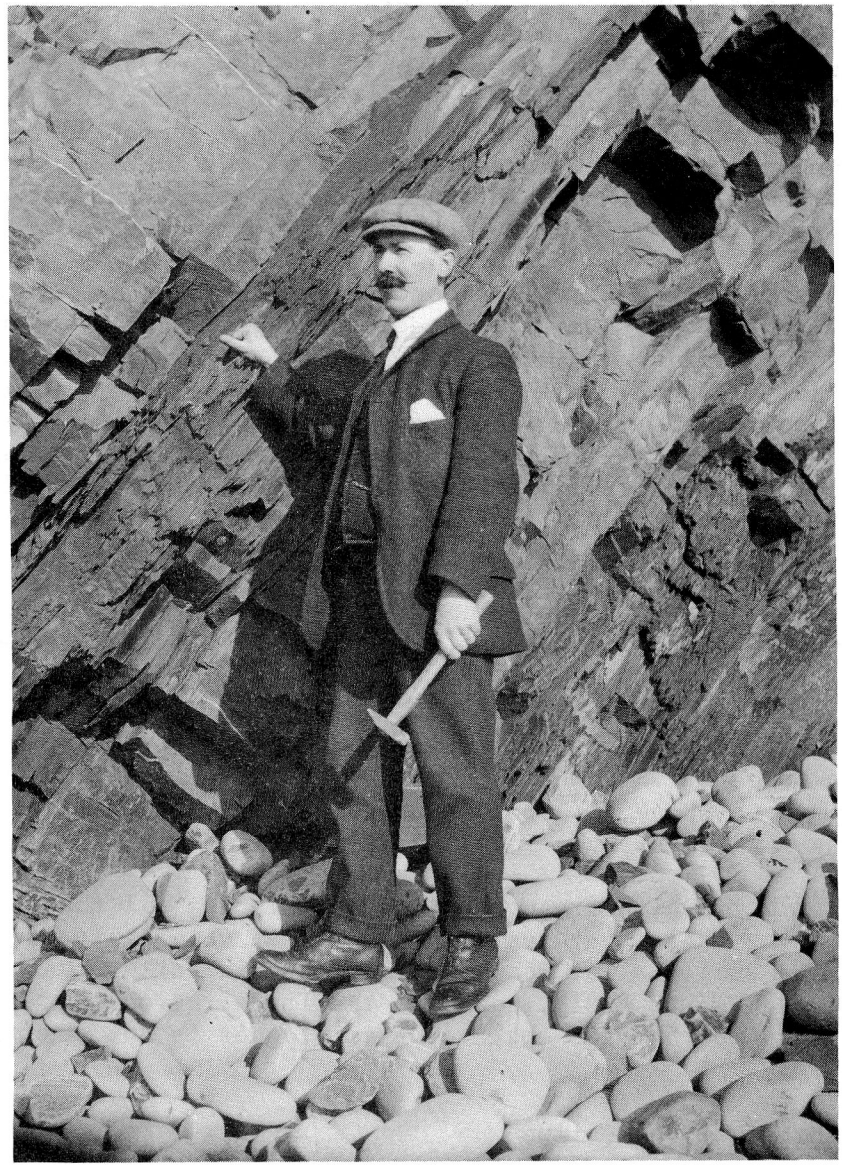

Fig. 1. Inkerman Rogers at Cockington Cliff, near Bideford, North De
September 1908. Photo by E.A.N. Arber.

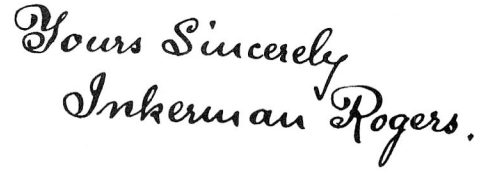

Fig. 2. Inkerman Rogers's handwriting, April 1934.

consistent. In some instances, there were other numbers and names on the back of the tablets, which had evidently been used before. On every specimen and fragment I tried to put a number, on self-adhesive paper, corresponding to the number on the tablet, so that they could be reassembled if they became separated. Sometimes, unfortunately, the separation had already occurred, and some of the labels were missing, including the original labels of bones from the Submerged Forest at Westward Ho! which have been copied in another hand.

A large holoptychian fish is fully labelled, with the month and year, December 1936, in which it was collected, but a series of fish fragments packed in the same box bear numbers only, and no check-list can be found. The fact that all are wrapped in newspaper of December 1936 suggests that they were all collected on the same occasion and have been in store ever since. The large fish is in a sheet of December 10th bearing the first announcement of the abdication of Edward VIII, which is of some historic interest in itself; the fossil became known at the Maritime Museum as the Abdication Fish.

There is a series of beach pebbles, again numbered but with no list or labels and therefore valueless. This is the more regrettable because Rogers studied the supply of material to the Pebble Ridge at Westward Ho!

A collection of fossils from the Orleigh Court Gravels is also numbered but without a catalogue. However in this case there is a comprehensive label in the box in which the specimens are packed, making it clear what they are, even if they are not individually identified.

Apart from the lists which presumably once existed of all these specimens, the numbers on the tablets suggest that there may originally have been a catalogue of the whole collection, but local enquiries in Bideford have proved fruitless. Fortunately, however, the labelling on most of the specimens is so good that the absence of catalogues is not a serious matter.

Scope of the Bideford collection

Inkerman Rogers's Bideford geological collection falls into five main categories, all from North Devon.

(1) About 75 specimens of fossil plants, as well as many plant petrifactions; about 40 goniatites and 40 other invertebrates; and about 50 fish fragments; from the Carboniferous between the estuary of the Taw on the east and Sandhole Rock between Welcombe and Morwenstow (just over the Cornish border) on the west.

(2) A few goniatites and other invertebrates and plant remains, from the Upper Devonian between the Taw estuary on the west and Hagginton Beach near Ilfracombe on the east. One large holoptychian fish and many fish fragments from the Upper Devonian at Woolacombe.

(3) A unique collection of about 85 echinoids and 25 other derived Cretaceous fossils, and a few rock specimens, from the Pliocene(?) Gravels of Orleigh Court near Bideford.

(4) More than 30 vertebrate bones and teeth, together with 30 worked flints, from the Submerged Forest and associated deposits at Westward Ho!; and about 25 worked flints from the Taw estuary, Baggy Point, and Orleigh Court.

(5) About 12 rock specimens of local origin; and 16 specimens of erratic rocks, possibly of glacial origin, from the Fremington Clay and from the shores of Barnstaple Bay.

There are also about 20 fossil plants collected by Rogers from the Radstock Coalfield, but, compared with the North Devon material, these have not got detailed horizons and localities.

Besides Rogers's own collection, Bideford Museum possessed a number of goniatites collected in the Hartland district by R.P. Chope, who was an authority on the history of the area.

There are also a few fossils from the Orleigh Court Gravels, and worked flints from the Taw area, collected by Dr. T. Young (*cover*) of Woolacombe.

There are also a few specimens presented by other collectors; some rock specimens from Devon supplied by Butler of Brompton Road, London; and a number of fossils of miscellaneous origin with insufficient horizon and locality to be of scientific value.

Horizons and localities

Inkerman Rogers gave the horizons and localities of all his North Devon specimens, but the stratigraphical names are now often out-of-date. The terms "Upper Culm" and "Middle Culm" are also sometimes used inconsistently, the one on the label and the other on the tablet of the same specimen. This is not, however, a matter of any significance, for the localities are given with such precision that the horizons could be named in modern terms with the help of the 1:50,000 maps now being published by the Institute of Geological Sciences. An extreme instance of the detail on the labels is "From the Posidonomya Beds, 499 yards north of railway line, and 100 yards from the embankment of the River Taw off Yelland Farm. Lower Culm Measures".

Moreover, the value of the collection is greatly enhanced by the existence of Rogers's own six-inch map of the Yelland area of the Taw estuary, and his one-inch maps of North Devon west of the Taw, on which he marked his localities with detailed annotations. These maps are now in the possession of Peter Keene of the Geography Section, Oxford Polytechnic. He has given photocopies of them to accompany the collection at the Royal Albert Memorial Museum at Exeter. With the help of copies which he has kindly given to me also, and with my own knowledge of North Devon, I have now identified almost all the localities of the specimens in the Bideford collection.

In particular, Rogers collected many specimens from the "culm" band of the Upper Carboniferous, which used to be worked for coal and for "Bideford Black" paint between Greenacliff, to the west of Bideford, and Pillhead Copse and beyond to the east.

The associated rocks were often quarried for building stone and road metal in the same pits. None of these "culm" workings is now in use, and it is difficult to identify all their sites. Pit Quarry at Abbotsham was so well

known and such a prolific source of fossils that Rogers evidently felt it unnecessary to describe where it was. Through the first edition of the Ordnance Survey map, it can be traced to a site (SS 421270) which now appears to be fenced in and overgrown. Peter Keene's father, Mr. J.C. Keene, has made enquiries about the old pits near East-the-Water, Bideford, and has found out from a man who still remembered them that Roberts' Quarry was probably one of the two (461265 and 462265) immediately east of Chudleigh House. Pollard's Quarry was definitely the one (469264) near the old Chapel Paint Works, and I have found that it has been used as a rubbish dump since its closure. Broadstone Quarry has not at present been identified; like Pollard's, it was situated half-a-mile east of Bideford; in 1903 it was flooded and a new quarry was later opened on the other side of the road.

Life and work of Inkerman Rogers

Inkerman Rogers was born at Northam near Bideford on November 5th 1866. He married and had two daughters. He always said that he was descended from the Rogers family of Pilton, by Barnstaple, and I believe that it was their motto and crest that he used. His claim was investigated and found to be correct by Burke's Landed Gentry before the publication of the 17th edition (1952) in which he was recorded as the last male representative of the Rogers family, which was connected by marriage in 1783 with that of Martin of Colleton Manor. The family is one of those who claim descent from John Rogers, the proto-martyr of Mary Tudor's reign. Inkerman Rogers was very proud of this, and he wrote a pamphlet on the life of John Rogers.

Inkerman's great-uncle had fought in the Peninsular War, and he himself took a great interest in the life of Napoleon. His own father, Sergeant Major William Rogers, D.C.M., had fought at the battle of Inkerman in the Crimean War, and named his son Albert Inkerman when he was born on the anniversary of the battle. Inkerman Rogers spelt his name "Inkermann" in his earlier publications and "Inkerman" in most of his later writing. He told me that he preferred the double "n" because it was the spelling used on his father's medals, but that Mr. Belinfante, then Permanent Secretary of the Geological Society, had pointed out to him that this was the German form of the name, and so he had reluctantly dropped it; but even after that he sometimes used one spelling and sometimes the other.

By profession, Inkerman Rogers was a watch-maker and horologist; he had a shop in Mill Street, Bideford, until 1910; after this he spent eighteen years in the London area, keeping his home in Bideford to which he returned in 1928. He was a great authority on old clocks, and had sole charge of the seventeenth century town clock at Hartland. He made a clock, said to be unique, with a Galileo escapement, which he gave to the North Devon Athenaeum at Barnstaple. At the age of ninety, he described how he had recently taken his watch to pieces, not expecting to be able to put it together again, but had succeeded. He made two beautiful sundials which are still to be seen in Bideford, one on the chapel in the cemetery and the other on his own house in Clovelly Road.

He used the address "Inkerman House", "Inkerman Cottage" and "Inkerman Place" indiscriminately; these are in fact adjacent properties, but his permanent home was what is strictly "Inkerman House", 113 Clovelly Road. After his wife's death in 1930, he lived there alone till he was nearly

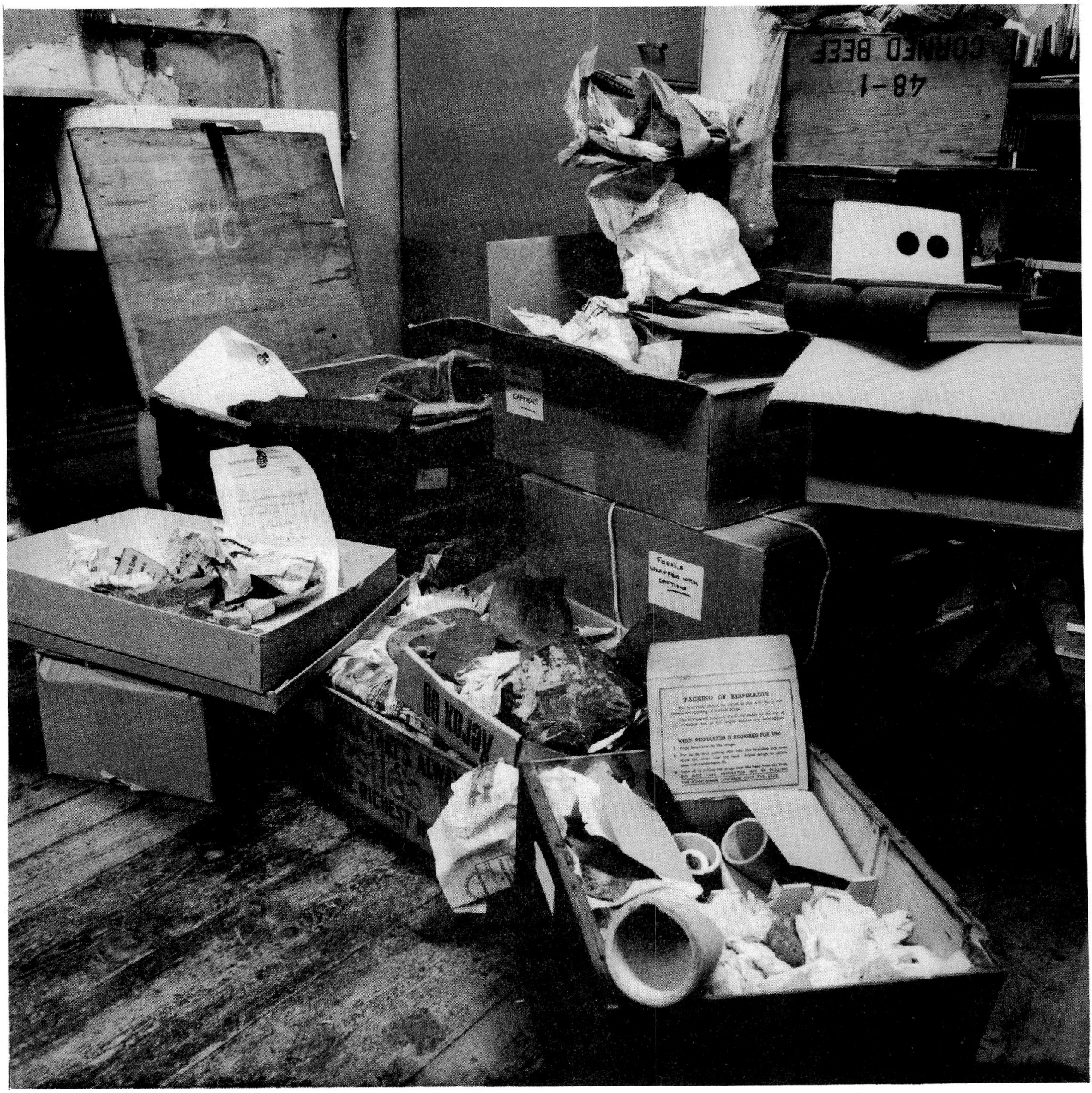

Fig. 3. The Bideford Museum geological collection being unpacked at the Royal Albert Memorial Museum, Exeter, November 1981. Photo provided by Kelvin Boot.

ninety, when his surviving daughter, Mrs. Mann (who herself died in 1979), came to look after him. He was something of a recluse and admitted few people to his house, but he always welcomed me on account of his friendship with my father, E.A. Newell Arber (1870 - 1918). I last saw Inkerman Rogers in hospital at Barnstaple a few days before his death on August 22nd 1959; at his funeral in Bideford cemetery chapel we sang the hymn "When the roll is called in Heaven I'll be there", and another also couched in military terms, which we were told had been the favourites of his father, the old Crimean veteran.

Rogers was a keen local historian, and published various papers as well as privately printed pamphlets on Bideford and the surrounding district: the invasion by Hubba the Dane; the Long Bridge of Bideford; shipbuilding at Bideford; ancient clocks in North Devon; the history of Lundy; and so on. He was made a Freeman of Bideford in 1947 and an Honorary Member of the Devonshire Association in 1948.

He began to take an interest in fossils after finding worked flints near Westward Ho!, and he collected extensively from the cliffs and coastal belt of North Devon. He also visited the Radstock Coalfield and Ireland. In 1903, my father, Newell Arber, who was Demonstrator in Palaeobotany at the Sedgwick Museum, Cambridge, began work on determining the age of the Carboniferous beds of North Devon by means of the fossil flora. He found Inkerman Rogers an invaluable fellow-worker; in a letter to my mother, Agnes Arber (cover), he described him as "the incomparable Rogers ... the genius". Rogers had a close knowledge of the whole area and an instinct for finding specimens, combined with endless patience and thoroughness of investigation. His description of collecting from dawn till 8 a.m., and again by candlelight after he had finished his own day's work, is reminiscent of Samuel Smiles's account of the methods of Robert Dick of Thurso. When Rogers was in hospital shortly before his death at the age of ninety-two, he said "I want to be out on Cornborough Cliffs with my hammer".

His geological observations on North Devon were factual and reliable, and were recorded in a series of sound scientific papers. In no way were they coloured by the prejudices on theoretical matters which he showed in some of his privately printed pamphlets: his violent anti-Catholicism, and his literal acceptance of the Bible which led to his disbelief in evolution. In early days, on one of his field expeditions with my father and D.G. Lillie, he was arguing that the earth was flat, and to demonstrate his point he seized their landlady's oil lamp and was in the act of turning it upside down when the other two snatched it from him and averted disaster. When Lillie later drew a caricature of the party, Rogers was shown holding a lamp.

Inkerman Rogers's chief geological publications

1904. I. Rogers & E.A.N. Arber. Note on a new fossiliferous limestone in the Upper Culm Measures of West Devon. Geol. Mag., (dec. 5) 1, 305 - 308.

1907. I. Rogers. On fossil fish. Rep. & Trans. Devon. Assoc. Advmt Sci., 39, 394-398.
Three specimens in the Bideford collection bear on their labels a reference to this paper, and are perhaps the "fragmentary fish remains" from the nodular shale beds at Instow, mentioned on pp. 397-8.

1908. I. Rogers. On the Submerged Forest at Westward Ho! Bideford Bay. Rep. & Trans. Devon. Assoc. Advmt Sci., 40,249-259. About 20 specimens in the Bideford collection bear a reference to this paper. It is also possible that a radius of Bos longifrons from the Raised Beach at Fremington is that mentioned at the foot of p. 255, but this is not probable as there is no reference on the label.

1909. I. Rogers. On a further discovery of fossil fish and mollusca in the Upper Culm Measures of North Devon. Rep. & Trans. Devon. Assoc. Advmt Sci., 41, 301-319

1910. I. Rogers. A synopsis of the fossil flora and fauna of the Upper Culm Measures of North-west Devon. Rep. & Trans. Devon Assoc. Advmt Sci., 42, 538-564. In this paper, Rogers stated (pp. 542-3): "The best specimens from my collection are in the Geological Department of the British Museum (Nat. Hist.). Another series has been placed in the Bideford Museum; and a number of specimens have been presented to the Sedgwick Museum, Cambridge University".

1910. J.G. Hamling & I. Rogers. Excursion to North Devon, Easter, 1910. Proc. Geol. Assoc. London, 21, 357-472.

1919. I. Rogers. Fossil fishes in the Devonian rocks of North Devon. Geol. Mag., 56, 100-103.

1921. I. Rogers. Primaeval fishes in the Devonian rocks of North Devon. Devonian Year Book, 52-57.

1927. I. Rogers. On the discovery of fossil fishes and plants in the Devonian rocks of North Devon. Rep. & Trans. Devon. Assoc. Advmt Sci., 58, 223-234.

1937. I. Rogers & B. Simpson. The flint gravel deposit of Orleigh Court, Buckland Brewer, North Devon. Geol. Mag., 74, 309-316. The specimens discussed in this paper are presumably those in the Bideford collection.

1937. B. Simpson & I. Rogers. A chipping-floor at Orleigh Court, North Devon. Antiquaries Journ., 17, 299-309.

E.H. Rogers, who also published work on the Submerged Forest at Westward Ho!, had, so far as I know, no connection with Inkerman Rogers.

Other museums holding material collected by Inkerman Rogers

Specimens, mostly of plants, goniatites, molluscs and fishes, from the Devonian and Carboniferous of North Devon, are in the following museums. I do not know if the list of museums is complete.

Department of Palaeontology, British Museum (Natural History).

About 300 specimens of plants, goniatites, molluscs and fishes, from the Carboniferous, purchased in 1904 and 1907. This collection is mentioned in Rogers's paper of 1910 in Rep. & Trans. Devon. Assoc. Advmt Sci. (p. 542) 14 fish remains from the Devonian, presented in 1920, and one Devonian plant in 1932. The remainder of Rogers's fish collection (100 palaeoniscids from the Carboniferous and one rhizodont from the Devonian) purchased in 1953.

Institute of Geological Sciences (London).

One goniatite purchased in 1907; 7 plant remains presented in 1926.

Sedgwick Museum, Cambridge.

About 65 specimens presented in 1907 and 1908, mostly in connection with the paper by E.A.N. Arber, "On the Upper Carboniferous Rocks of West Devon and North Cornwall", Quart. Journ. Geol. Soc. London, 63 (1907), 1-27. In this paper, Arber stated (p. 23) that Rogers had collected most of the fish, cephalopods and lamellibranchs. The collection is also mentioned in Rogers, 1910, Rep. & Trans, Devon. Assoc. Advmt Sci., p. 543.

Royal Albert Memorial Museum, Exeter.

Many specimens acquired in 1916, 1918 and 1928. Some of these are connected with Rogers's papers of 1907 and 1910 in the Rep. & Trans. Devon. Assoc. Advmt Sci.

Museum of the Torquay Natural History Society.

About 40 specimens of plants, goniatites, fishes etc.

North Devon Athenaeum, Barnstaple.

About 20 specimens from the Submerged Forest at Westward Ho!, and 12 specimens of plants, goniatites and fishes from the Devonian and Carboniferous.

So far as I know, the collection of fossils from the Orleigh Court Gravels is unique to the Bideford collection. I have been unable to discover the whereabouts of the worked flints from the Orleigh Court Gravels described and figured by Simpson and Rogers in the Antiquaries Journal for 1937. All that can be said is that they are not in any of the collections listed here, nor are they in the Sub-Department of Anthropology, Department of Palaeontology, British Museum (Natural History), nor in the Department of Prehistoric and Romano-British Antiquities, The British Museum, nor in the collections of Exeter University or Swansea University.

Acknowledgements

I am grateful to the Rev. P. Longridge and Mr. F.A. Warrener, of the North Devon Museum Trust, for enabling me to examine the Bideford collection.

For help in gathering information about Inkerman Rogers's other collections, I am indebted to Mr. K.J. Boot of the Royal Albert Memorial Museum, Exeter; Miss V.T. Young of the Department of Palaeontology, British Museum (Natural History); Dr. C.L. Forbes of the Sedgwick Museum, Cambridge; and Mr. G.A. Morris, formerly Librarian of the North Devon Athenaeum, Barnstaple. I am grateful also to Mr. R.G. Kruszynski of the British Museum (Natural History); Dr. G. de G. Sieveking of The British Museum; Dr. E.B. Selwood of Exeter University; Dr. R. Goldring of Reading University; Mrs. J. Nuttall of Swansea University; and Mr. G.S.C. Green, Librarian (in Charge), Bideford Library.

For their help in identifying localities, I am indebted to Mr. J.C. Keene of Westward Ho!, and Mr. Peter Keene.

I wish also to thank Miss M.E. Jenkinson, formerly Borough Librarian of

Bideford, and Mrs. J. Holmes of Westward Ho!, for help and for information on matters concerning Inkerman Rogers.

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THE FOSSIL VERTEBRATA IN THE DEPARTMENT OF GEOLOGY AT SOUTHAMPTON UNIVERSITY

by J. B. Delair

The largest single collection of fossils in Hampshire is housed in the Department of Geology, Southampton University. Originally formed at the old Hartley Institute, the collection consists of a wide range of British and foreign specimens among which those from the typical Hampshire Basin formations understandably predominate. The present note relates to the vertebrate remains which form a significant proportion of the collection as a whole.

With the exception of the Amphibia, all classes of vertebrata are present. They range in age from Devonian to Holocene, and include several noteworthy specimens. A very considerable amount of material also comes from localities unrepresented in collections elsewhere, and, as such, constitutes unique evidence for the former temporal and spatial distribution of the relevant animals. The various vertebrata classes are reviewed below separately.

PISCES: One hundred and twenty-three identifiable genera and/or species are present, together with various miscellaneous fragments of uncertain affinities, and several otoliths. Although a number of specimens are unusually well preserved or exhibit interesting features, none, so far as is known, have been described or figured in the literature. The following tabular synopsis shows that remains of sharks and rays comprise the bulk of the fish remains, with the majority of specimens coming from Chalk horizons.

REPTILIA: Fifty-two genera and/or species have been determined in addition to twelve other saurian groups undefinable below ordinal rank, a variety of assorted unidentifiable fragments, and a number of three-toed footprints. Collectively, the specimens range in age from the Rhaetic to the Red Crag (as derived material), with Jurassic remains --- mostly from neighbouring Dorset --- the most prolific. Certain specimens are of particular interest. The largest ichthyosaurian centrum yet encountered in any collection is one such. A note on it is presently in preparation. A possible new sauropterygian and a chelonian are further forms awaiting future study. Apparently no specimens have been individually recorded in the literature.

The celebrated Upper Jurassic Middle Purbeck dinosaur tracks discovered at Herston, near Swanage, were broken up and dispersed in the early 1960's when some of them were acquired by the Geology Dept. These specimens include imprints from the series mapped in the 1960's which were described in 1973[1]

AVES: Few in number, these fossils consist almost entirely of isolated bones of the extinct New Zealand birds, Dinornis and Syornis. It is uncertain how the specimens were initially acquired.

MAMMALIA: Except for three Tertiary and a handful of Red Crag (derived) occurrences, all the mammalian material is of Upper Pleistocene or Holocene age. A few specimens have been mentioned or figured in the literature,[2] although not every fossil so recorded can now be identified and, in some instances, no longer appears to be in the collection. The loss or misplacement of such specimens doubtless results from the collection's chequered early history and the indifferent curation generally accorded it

between the two World Wars. Nevertheless, thirty-four genera and/or species can be recognized, in addition to a variety of miscellaneous remains of less certain identity. Of these, none appears to be of any great scientific significance, although the specimens from Kent's Cavern, near Torquay, may have some historical importance.

SOURCES OF THE COLLECTION

Over the years the Southampton University fossil vertebrata collection has accumulated from numerous sources, including donations, exchanges, and purchases of older collections amassed by various talented amateur naturalists and geologists. Of these, especially notable are the collections of E.St. John Burton (portions not lodged in the B.M.(N.H.), Lincoln museum, the Tudor House Museum, or museum of the Bournemouth Natural Science Society), of Dr. C.D. Day of Dorchester, the Sims and Lucas collections, and the very large collection of E. Westlake of Fordingbridge. Several of these themselves incorporated portions of still earlier collections, such as those of W.R. Brodie (Swanage), John Rutter (Shaftesbury), A.E. Gould (Manchester), and John Judd (Stockbridge), and thus contained specimens of some historical significance.

Special thanks are due to Professor F. Hodson for suggesting that this survey be undertaken, for making the collections freely available, and, subsequently, for helpful criticism and advice. Thanks are also due to Dr. I.M. West and other members of the staff of the Department of Geology for much varied assistance during the prosecution of this survey.

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The overall stratigraphical and geographical distribution of the collection is summarised in the following list of localities and tabular synopsis.

ALPHABETICAL LIST OF FOSSIL LOCALITIES

NB: British localities are shown in upper and lower case type, and foreign localities are given in capitals, throughout. In several instances, precise localities are unrecorded although the counties of origin are known. In such cases counties only are indicated. Unprovenanced material having documented horizons is distinguished thus u. Wholly undocumented material is recorded thus x.

1. Alderton, Suffolk.
2. Alton, Hants.
3. Alum Bay, Isle of Wight.
4. Andover, Hants.
5. Aust, Gloucestershire.
6. Banwell, Avon (Somerset).
7. Barrington, Cambs.
8. Barton, Hants.
9. ?Barton, Hants.
10. Barton Cliff, Hants.
11. Becton Bunny, Hants.
12. Beer Head, Devon.
13. BERING STRAIT, ALASKA.
14. Betchworth, Surrey.
15. Black Head, nr. Osmington, Dorset.
16. Black Ven, nr.Charmouth, Dorset.
17. Bletchley, Bucks.
18. Bognor, West Sussex.
19. Bonchurch, Isle of Wight.
20. Bracklesham, West Sussex.
21. Brean Down, Avon (Somerset).
22. BREOANDS, CARENTAN, FRANCE.
23. Brockenhurst, Hants.
24. Nr. Brook, Isle of Wight.
25. Buriton, Hants.
26. Burwell, Cambs.
27. Butley Mills, Suffolk.
28. Cambridge, Cambs.
29. Cambridgeshire.
30. CANTERBURY, NEW ZEALAND.
31. Chapman's Pool, Dorset.
32. Charlton, nr. Downton, Wilts.
33. Charlton, Kent.
34. Cheddar (Gough's Cave), Somerset.
35. Chickerell, Dorset.
36. Chilcomb, Hants.
37. Chilmark, Wilts.
38. Clarendon, Wilts.
39. Compton Bay, Isle of Wight.
40. Compton Down, Isle of Wight.
41. Coombe Keynes, Dorset.
42. Devil's Ditch cutting, Hants.
43. Devizes Road, nr. Salisbury, Wilts.
44. Dewlish, Dorset.
45. Downton tunnel, Wilts.
46. Dorset.
47. Dover, Kent.
48. Durlston Bay, Dorset.
49. East Hambrow, Hants.
50. East Harnham, Wilts.
51. East Water Bay, Kent.
52. Erith, Greater London (Kent).
53. Nr.FARSON, WYOMING, USA.
54. Fawley, Hants.
55. Felixstowe, Suffolk.
56. Feltham, Greater London (Middlesex).

57. Ferns pit, Marlow, Bucks.
58. Fisherton, Wilts.
59. Folkestone, Kent.
60. Fordingbridge, Hants.
61. Freefolk, Hants.
62. Gillingham, Dorset.
63. Gore Cliff, Isle of Wight.
64. Granchester, Cambs.
65. Gravesend, Kent.
66. Grays, Essex.
67. Hampshire.
68. Haryer Hill cutting, Wilts.
69. Haslemere, Surrey.
70. Hastings, East Sussex.
71. Hempstead, Isle of Wight.
72. Hengistbury Head, Dorset.
73. Herne Bay, Kent.
74. Highcliffe, Dorset, (Hants.)
75. Highfield, Fisherton, Wilts.
76. Hock, Gloucestershire.
77. Hollington, East Sussex.
78. Hopton, Staffs.
79. Hordle Cliff, Hants.
80. Horsebridge, S.of., Hants.
81. Isle of Portland, Dorset.
82. Isle of Purbeck, Dorset.
83. Isle of Sheppey, Kent.
84. Isle of Wight.
85. ?Isle of Wight.
86. Nr.JAGUARIBE, CEARA, BRAZIL,
87. Kenley, Greater London, (Surrey)
88. Kent.
89. Kent's Cavern, Devon.
90. Kimmeridge Bay, Dorset.
91. Larkwhistle Farm cutting, Hants.
92. Lewes, East Sussex.
93. Lincolnshire.
94. Long Mead End, Hants.
95. Lulworth Cove, Dorset.
96. Lyme Regis, Dorset.
97. ?Lyme Regis, Dorset.
98. Man-of-War Bay, Dorset.
99. Medina, Isle of Wight.
100. Mervington, Hants.
101. Micheldever, Hants.
102. MONTE BOLCA, ITALY.
103. ?MONTE BOLCA, ITALY.
104. Mupes Bay, Dorset.
105. Nant Byfre, Glamorganshire.
106. New Milton, Hants.
107. North Foreland, Kent,
108. Norwich, Norfolk.
109. Offham, East Sussex
110. Opper pit, South Charford, Hants.
111. Orkney.
112. Polhill, Kent.
113. Porton, S. of, Wilts.
114. PORT ROYAL HARBOUR, JAMAICA.
115. Potton, Beds.
116. Riddlesdown, Greater London (Surrey).
117. Ringstead Bay, Dorset.
118. Rope Lake Hole, Dorset.
119. Rope Lake Head, Dorset.
120. Sandown Bay, Isle of Wight.
121. Sandwick, Orkney.
122. Sevenoaks, Kent.
123. Shaftesbury, Dorset.
124. Shaftesbury, S.of, Dorset.
125. Shotover, Oxon.
126. Skaill, Orkney.
127. SOLENHOFEN, GERMANY.
128. Solent floor, off Newtown R. esturary, Isle of Wight.
129. Southampton docks, Hants.
130. St. Catherine's Point, Isle of Wight.
131. St. Gile's Hill tunnel, Hants.
132. Standlynch Farm cutting, Wilts.
133. Stonesfield, Oxon.
134. SUEZ CANAL, EGYPT.
135. Suffolk.
136. Surrey.
137. Swanage, Dorset.
138. ?Swanage, Dorset.
139. Swanage Bay, Dorset.
140. Nr. Swanage, Dorset.
141. Thames R. (unlocalised).
142. Thorness Bay, Isle of Wight.
143. Thorpe, Norfolk.
144. Thurso harbour, Caithness.
145. Tynet Burn, Banffshire.
146. Upway, Dorset.
147. Ventnor, Isle of Wight.
148. Voy, Orkney.
149. Waldringfield, Suffolk.
150. Warden, Isle of Sheppey, Kent.
151. West Harnham, Wilts.
152. Weydale Quarry, Caithness.
153. Weymouth, Dorset.
154. Whaddon cutting, Wilts.
155. Whitby, N.Yorkshire.
156. Whitecliff, Isle of Wight.
157. Whitenose, Dorset.
158. Wick Down, Wilts.
159. Wilmcote, Warws.
160. Wilton, nr.Salisbury, Wilts.
161. Wiltshire.
162. Windy Knoll Cave, Derby.
163. Winnall, N. of, Hants.
164. Witherington cutting, Wilts.
165. Woodbridge, Suffolk.
166. WYOMING, USA
167. Yew Hill cutting, Wilts.

Southampton University Fossil Vertebrata.
STRATIGRAPHICAL AND GEOGRAPHICAL DISTRIBUTION

Genera and Species.	Devonian	Carboniferous	Permian	Triassic		Jurassic								
				Trias	Rhaetic	Lias	Oolites*	Oxford Clay	Corallian	Kimmeridge Clay	Portlandian	Purbeckian	Wealden	Lower Greensand
I: PISCES.														
Acrodus anningiae					?u	96	u							
?Aetobatis sp.														
Anacorax falcatus														
Anacorax pristodontus														
Anacorax sp.														
Cf.Anacorax sp.														
Asteracanthus verrucosus.												140		
Asteracanthus sp.							?u							
Cf. Belonostomus sp.														
Beryx lewesiensis														
Beryx radians														
Beryx sp.														
?Caturus sp.										u				
Carcharodon angustidens														
Carcharodon heterodon														
Carcharodon megalodon														
Carcharodon sp.														
Ceratodus sp.					u									
Coccosteus decipiens.	127; 149; u.													
Coelacanthus elegans		u												
Coelacanthus lepturus		u												
Coelacanthus sp.		u												
?Copodus sp														
?Cybium sp.														
Dapedius politus.						u								
Dapedius sp.						u								
Dapedius sp., or Tetragonolepis sp.						u								
Dercetis elongatus														
Diplacanthus sp.	111													
Diplodus gibbosus		78												
Diplomystus dentatus														
Diplomystus humilis														
Diplomystus sp.														
?Diplomystus sp.														
Diplopterus borealis	145													
Dipterus valensiennesi	111													
Dipterus sp.	144													
?Enchodus sp.														
Eugaleus minor														
Eugnathus sp.										31				
Gasteronemus(Mene)rhombaeus.														
Gasteronemus(Mene) sp.														

Cretaceous			Tertiary			Quaternary				
Gault	Upper Greensand	Chalk *	Eocene *	Oligocene	Post-Oligocene	Lower Pleistocene	Upper Pleistocene	Holocene	unrecorded	*Zones and divisions undifferentiated.
			u							
		4;14;25;43;50; 65;66;92;101; 101;113;132; 154;164;167;u								
		u								
		25;164								
		36								
			102							
		33;92								
		u								
		87								
						135				
						165				
						114,u				
					134	55,u				
									x	
			?8							
		32;87								
			53							
			53							
			53							
			53							
		40								
			129							
			102							
			103							

Southampton University Fossil Vertebrata.
STRATIGRAPHICAL AND GEOGRAPHICAL DISTRIBUTION

Genera and Species.	Devonian	Carboniferous	Permian	Triassic		Jurassic							Wealden	Lower Greensand
				Trias	Rhaetic	Lias	Oolites*	Oxford Clay	Corallian	Kimmeridge Clay	Portlandian	Purbeckian		
PISCES (Continued)														
Gyracanthus formosus.		u.												
?Gyroptychius sp.														
?Histionotus sp.														
Holopteryx sp.														
Hybodus ?ensis.												146		
Hybodus grossiconus.							u	153						
Hybodus reticulatus						96								
Hybodus sp.						76;u						137	120	
Hypotodus sp.														
Isurus sp.														
?Isurus sp.														
Knightia sp.														
Lamna appendiculata														
Lamna macrorhiza.														
Lamna obliquus														
Lamna vincenti														
Lamna sp.														98
?Lamna sp.														
Lepidotus mantelli													70; 84	
Lepidotus minor												137		
Lepidotus sp.						96;u						137; 146;	122	
?Lepidotus sp.											?u	146		
Cf.Lepidotus sp.												82	77;u	
?Macropoma sp.														
Mesodon sp.												46; 146	u	
Microdon hexagonus							127							
Cf.Microdon sp.												146		
Myliobatis striatus														
Myliobatis sp.														
Myliobatis sp., or Aetobatis sp.														
Nemacanthus monilifer												u		
Notidanus sp.														
Odontaspis cuspidata (incl. O.cuspi-data teretidens)														
Odontaspis elegans.														
Odontaspis macrota striata														

Cretaceous			Tertiary			Quaternary			unrecorded
Gault	Upper Greensand	Chalk *	Eocene *	Oligocene	Post-Oligocene	Lower Pleistocene	Upper Pleistocene	Holocene	
									x
	86	u							
			u						
		65				u			
						u			
			53						
51; 59	63; 93; 124.	47;92;101;123; 154;u							
		26							
			83;u						67
			74						67
59	2;19 39; u	4;14;36;38;43; 50;65;66;91; 100;101;110;120 130;132;151;154 156;158;164;167 u. 50	3;8;u						x
		33							
									x
			129						
			8;20;72; 83			136;			
			54.						
						165			
			8;83						
		?101							
		?101	10;18;73; 83						

*Zones and divisions undifferentiated.

Genera and Species.	Devonian	Carboniferous	Permian	Triassic		Jurassic							Wealden	Lower Greensand
				Trias	Rhaetic	Lias	Oolites*	Oxford Clay	Corallian	Kimmeridge Clay	Portlandian	Purbeckian		
PISCES (Continued)														
Odontaspis sp.														
Osteolepis microlepidotus	153													
Otodus crassus														
Otodus obliquus														
Otodus trigonalis														
Otodus ?trigonalis														
Otodus sp.														
?Otodus sp.														
Otolithus spp.														
Oxyrhina mantelli														
Oxyrhina ziphodon														
Oxyrhina sp.														
?Oxyrhina sp.														
?Petalodus		u												
Pholidophorus bechei						96; u								
Pholidophorus sp.						u								
Pristis sp.														
?Pristis sp.														
Psammodus sp.														
?Psammostues sp.	u													
Psephodus sp.														
Ptychodus altior.														
Ptychodus ?altior														
Ptychodus decurrens														
Ptychodus decurrens. var mammillaris														
Ptychodus ?decurrens														
Ptychodus latissimus														
Ptychodus mammillaris														
Ptychodus ?polygyrus														
Ptychodus sp.														
Pycnodus sp.						133					37			
?Rhaphiodon sp.														
Rhizodopsis sp.		u												
Rhizodus sp.		u												
Saurichthys sp.					5									
Saurocephalus lanciformis														
Saurocephalus sp.														
?Saurocephalus sp.														
Scapanorhynchus subulatus														
Scapanorhynchus sp.														
?Scapanorhynchus sp.														u
Sparmodus cf.ovalis														
Sphaerodus gigas														115
Sphaerodus sp.													u	
Strophodus sp.							u							
?Strophodus sp.							u							
Tetrapterus priscus														

Cretaceous			Tertiary			Quaternary			unrecorded	
Gault	Upper Greensand	Chalk *	Eocene *	Oligocene	Post-Oligocene	Lower Pleistocene	Upper Pleistocene	Holocene		*Zones and divisions undifferentiated.
			8;54;72;129			1;149;u				
		116								
		88								
						u				
						u				
		87								
		u	72;129			165;u				
			129							
		50;154;160;u				?u			x	
						u				
		36;167;u								
		147;u								
		167;u								
		u	54							
									x	
									x	
		92;u								
		u								
		12;36;65;110								
		136;157;163;u								
		u								
		u								
		u								
		4;131;u								
		u								
		25;66;87;88;u							x	
		14								
	28									
		167;u							x	
		154								
		123								
		14;167;u								
		167								
			102							
			83							

Southampton University Fossil Vertebrata.
STRATIGRAPHICAL AND GEOGRAPHICAL DISTRIBUTION

Genera and Species.	Devonian	Carboniferous	Permian	Triassic		Jurassic							Cretaceous	
				Trias	Rhaetic	Lias	Oolites*	Oxford Clay	Corallian	Kimmeridge Clay	Portlandian	Purbeckian	Wealden	Lower Greensand
PISCES (Continued)														
Cochliodont gen.ind.		u												
Holostean gen. ind.													u	
Hybodont gen.ind.														
Lamnid gen.ind.														
Odontaspid gen.ind.														
Palaeoniscid gen.ind.	111													
Psammodont gen.ind.		u												
Teleostean gen.ind.												95	122	
Indet.pisces.	105/ 145	u	?u			96;u	u			119	u	48; 59; u	u	u
II: REPTILIA														
Amphichelydian gen.ind.												137		
Chelonian gen.ind.												146		
Crocodilian gen.ind.												48; 82	85	
?Crocodilian gen.ind.													84	
?Cryptocleidus oxoniensis								17						
Dinosaurian gen.ind.														
Diplocynodon (Crocodilus) hantoniensis														
Cf. Diplocynodon sp.														
Emys sp.														
?Emys sp.														
?Eretmosaurus sp.						96								
Eurypterygius (Ichthyosaurus) communis var.						96								
Eurypterygius (Ichthyosaurus) intermedius						96								
Eurypterygius (Ichthyosaurus) ?intermedius						97								
Goniopholis crassidens.												146		
Goniopholis sp.												146		
?Goniopholis sp.												u		
Goniopholid crocodilian (gen.ind.)												146		
?Hylaeochelys sp.													u	
?Hylaeosaurus sp., or Vectisaurus sp.													?u	
"Ichthyosaurus" sp						96; 159; u				118; 119; 125; ?u				
Ichthyosaurian gen.ind.														
Iguanodon sp													24; 84; 139; u	

Cretaceous			Tertiary			Quaternary			unrecorded
Gault	Upper Greensand	Chalk *	Eocene *	Oligocene	Post-Oligocene	Lower Pleistocene	Upper Pleistocene	Holocene	
	86	u							104
	140	2;45;132;154;u	54;83;129 8;u			166;u			
u	29	65;154;164;167 ?2;14;25;38;41 42;49;50;61;65 68;80;91;107; 154;160;167;u	23 8;54;103 150			143 27;u			x x
?u			3;11;u	142					x x
			74	84					x
			79 u	143					
			u						
	29	47							x

*Zones and divisions undifferentiated.

Southampton University Fossil Vertebrata.
STRATIGRAPHICAL AND GEOGRAPHICAL DISTRIBUTION

Genera and Species.	Devonian	Carboniferous	Permian	Triassic		Jurassic							Cretaceous	
				Trias	Rhaetic	Lias	Oolites*	Oxford Clay	Corallian	Kimmeridge Clay	Portlandian	Purbeckian	Wealden	Lower Greensand
REPTILIA (Continued)														
Iguanodont gen.ind.														
Leptopterygius (Ichthyosaurus) platyodon						96								
Macropterygius (Ichthyosaurus) trigonus										?u				
Macropterygius (Ichthyosaurus) ?trigonus								35						
Macropterygius (Ichthyosaurus) ?thyreospondylus										15				
Macropterygius (Ichthyosaurus) dilatatus								?u		118				
Macropterygius (Ichthyosaurus) dilatatus var.										117				
Macropterygius (Ichthyosaurus) cf. ovalis										u				
Macropterygius sp.								u		15;u				
Megalosaurus ?kokeni													u	
Megalosaurus sp.												147	u	
Myopterygius (Ichthyosaurus) campylodon														
Myopterygius sp.														148 u
Ocadia sp.														
Cf.Ocadia sp.														
Ophthalmosaurus sp.										119				
?Ophthalmosaurus sp.								35						
?Peloneustes sp.								?u						
Plesiosaurus cf.bitractensis					5									
Plesiosaurus ?dolichodeirus						96								
Plesiosaurus ?rostratus						96;u								
Plesiosaurus sp.					5	96				90				
?Plesiosaurus sp.						96								
Pleurosternum cf.concinnum												137		
Pliosaurus cf.gamma.										?u				
Pliosaurus sp.										31; 62; 81; u				
?Pliosaurus sp.								17						
Pliosaurian gen.ind.													69	
Polyptychodon interruptus														u
Polyptychodon sp.														
?Polyptychodon sp.														
Pterosaurian gen.ind.							133						122	
Sauropterygian gen.ind.														
Steneosaurian crocodile,ind.							u					146		
Stretosaurus sp.										u				
Trionyx cf.henrici														
Trionyx incrassatus														

Cretaceous			Tertiary			Quaternary				
Gault	Upper Greensand	Chalk *	Eocene *	Oligocene	Post-Oligocene	Lower Pleistocene	Upper Pleistocene	Holocene	unrecorded	
									x	
	28								x	
			129	84						
		167							x	
	28; 29	167								
		167								
		108								
		154								
	u									
			79	142						

*Zones and divisions undifferentiated.

Southampton University Fossil Vertebrata.
STRATIGRAPHICAL AND GEOGRAPHICAL DISTRIBUTION

Genera and Species.	Devonian	Carboniferous	Permian	Triassic		Jurassic							Wealden	Lower Greensand
				Trias	Rhaetic	Lias	Oolites*	Oxford Clay	Corallian	Kimmeridge Clay	Portlandian	Purbeckian		
REPTILIA (Continued)														
Trionyx cf.incrassatus														
Trionyx ?polchriceps														
Trionyx sp.														
?Trionyx sp.														
Reptilia indet.						16	155					146	23	
Reptilia ichnites.												82		
II: AVES.														
Dinornis sp.														
Syornis casuarius														
Aves indet.														
IV: MAMMALIA.														
Archidiskodon (Elephas) meridionalis														
Balaenoptera emarginata														
Balanus sp.														
Bison sp.														
Bos primigenius														
Bos ?primigenius														
Bos sp.														
Bos sp., or Bison sp.														
?Bos sp.														
Bovine gen.indet.														
Cervus elaphus														
Cervus ?elaphus														
Cervid gen.ind.														
Cetacean gen.ind.														
Coelodonta (Rhinoceros) antiquitatis														
"Elephas"sp.														
Equus caballus														
Equus sp.														
?Equus sp.														
Hippopotamus sp.														
?Hippopotamus sp.														
Mammuthus (Elephas) primigenius														
Mammuthus sp.														
Mastodon arvernensis														
Megaceros hibernicus														
?Megaceros hibernicus														
?Ovis sp.														

Cretaceous			Tertiary			Quaternary			unrecorded
Gault	Upper Greensand	Chalk *	Eocene *	Oligocene	Post-Oligocene	Lower Pleistocene	Upper Pleistocene	Holocene	
				142					
			106						
			u						
			u						
		66;154;?167	u		u				x
								30	
								30	
									x
						44	?52		
						165			
						u			
							128		
							128		
							128		
							128;129	u	
							147;u		
							56;75;		
							128		
							52;58;		
							128		
							21		
							128	?u	
							128		
							32;99;		
							128;u	?u	
						135;u			
							7		
							34;u		
							141		
							60;75;u	90	x
							128		
							71		
							u		
							13;128;		
							u		
							u		
						u			
							89		
							u		
								u	x

*Zones and divisions undifferentiated.

Southampton University Fossil Vertebrata.
STRATIGRAPHICAL AND GEOGRAPHICAL DISTRIBUTION

Genera and Species.	Devonian	Carboniferous	Permian	Triassic		Jurassic							Cretaceous	
				Trias	Rhaetic	Lias	Oolites*	Oxford Clay	Corallian	**Kimmeridge Clay**	Portlandian	Purbeckian	Wealden	Lower Greensand
MAMMALIA (Continued)														
Palaeoloxodon (Elephas) antiquus.														
?Palaeotherium sp.														
Rangifer (Cervus) tarandus														
Rangifer sp.														
Rhinoceros sp.														
?Rhinoceros sp.														
Rodentia gen.ind.														
Ursus spelaeus														
Ursus sp.														
Vulpes (Canis) vulpes														
Zeuglodon sp.														
Mammalia gen.ind.														

Cretaceous			Tertiary			Quaternary			unrecorded
Gault	Upper Greensand	Chalk *	Eocene *	Oligocene	Post-Oligocene	Lower Pleistocene	Upper Pleistocene	Holocene	
				u			57		
							75		
								121	
							89		
							89;128		
								u	
							89		
							u		
							6;162;u		
			?u						
				u		55	128;u	u	x

*Zones and divisions undifferentiated.

BRITISH FOSSILS AT THE QUEENSLAND MUSEUM

by Sue Turner

In September 1980 I began a survey of the British fossil collections at this Museum with various objectives in mind; to help sort out names, geological ages and localities, to check on conservation needs, to obtain information on collectors where possible, and to assess the usefulness of each specimen to the Queensland Museum. Any specimens found without data will be judged to see if they can be used for display or education. Although most of the collection is now in one place, ordered stratigraphically and partly systematically, some specimens are still on display and a few are in separate donor collections.

At this stage virtually all specimens have been checked and genus and species names updated where possible. I have not yet been through all the old registers and correspondence but have been able to find reference to the source of some of the fossils. Although there are no type or figured specimens, it is interesting to find some from important British fossil collectors. These seem mostly to have come indirectly through other collectors e.g. F.P. Lucas, (see GCG 3, 21 for our unanswered appeal) or by exchange with, or donation by U.K. museums.

The most interesting example for me was the comparatively large collection of Coal Measures vertebrates from the Thomas Atthey and William Dinning collections of the Hancock Museum, Newcastle-upon-Tyne (my former 'home' for 9 years) which recently has become a centre of interest. The spoil heap from the original site of the large bone bed from which these collections came has been relocated and new bone bed material removed to the Hancock Museum for study as part of the Nature Conservancy Council's Geological Conservation Review. The Carboniferous amphibian fauna from this site is very important and each time the Atthey collections are reassessed new material is forthcoming (e.g. Boyd and Turner, 1980). These Coal Measures vertebrates are prone to pyrite disease and usually require a humidity controlled environment. A search for letters here from the last century by Miss Jenny Kuys has produced one from Prof. G.A. Lebour (1847-1918) of the Geology Department of Newcastle upon Tyne, then a college of Durham University to C.W. De Vis, then curator of the Queensland Museum, who initiated an exchange deal on these fossils (fig 1.). There will be other specimens of interest to British curators, and this article will, I hope, encourage other Australian museums to examine their British collections.

GCG 2,490-3 already records some data about the very important British collections which have reached the National Museum of Victoria. Reciprocal information of Australian specimens in U.K. museums would also be appreciated.

The Queensland Museum was initiated around 1851 mostly by the influence of Charles Coxon (1809-1876) first curator, a Darling Downs settler and brother-in-law of noted ornithologist John Gould (1804-1881). The present building, at the corner of Gregory Terrace, became the Museum in 1900 when the building in William Street, Brisbane, designed as the museum, proved inadequate (Mack, 1956). Several of the curators have been active

Fig. 1

Geology Division,
College of Physical Science,
Newcastle-upon-Tyne.

2 Feby 1883

Dear Sir,

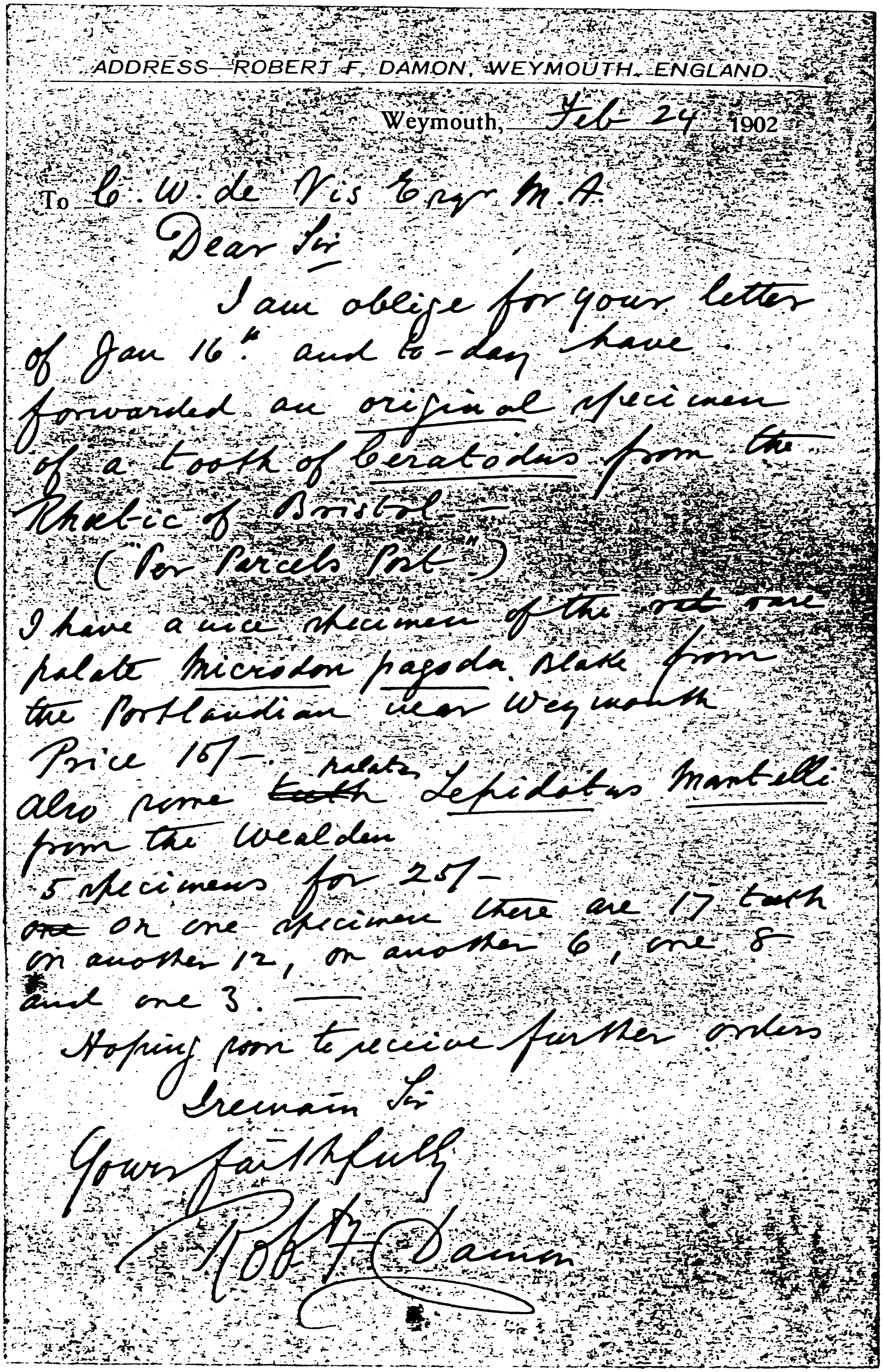
In reply to your letter of the 21st November received this day only I beg to state that we shall be happy to enter into exchanging relations with your Museum. All we can offer at present is a fairly representative set of Carboniferous fossils from the North of England embracing good specimens of the more characteristic fossils of the Carboniferous Limestone Series as developed in Northumberland and Durham (Bernician) and of the Coal-Measures. Also a small (say 200 specimens) of British Igneous rocks.

Anything illustrating the typical mineralogy, petrology, or paleontology of Queensland would be acceptable to us.

Yours very faithfully
G. A. Lebour

Ch. W. De Vis Esq.

Fig. 2



ADDRESS—ROBERT F. DAMON, WEYMOUTH, ENGLAND.

Weymouth, Feb 24 1902

To C. W. de Vis Esqr. M.A.

Dear Sir

I am oblige for your letter of Jan 16th and to-day have forwarded an original specimen of a tooth of Ceratodus from the Rhaetic of Bristol —
("Per Parcels Post")

I have a nice specimen of the ~~ext~~ rare palate Microdon pagoda slate from the Portlandian near Weymouth
Price 15/—
also some ~~teeth~~ palate Lepidotus Mantelli from the Wealden
5 specimens for 25/—
~~one~~ on one specimen there are 17 teeth on another 12, on another 6, one 8 and one 3. —

Hoping soon to receive further orders
I remain Sir
Yours faithfully
Robt F Damon

Fig. 3

Witton. Indooroopilly Jany 17th 1879

The Board of Trustees, Queensland Museum

Gentlemen,

I have here a collection of Minerals, Rocks and Fossils from Britain & Europe, most of which have been purchased by myself for a private collection. As I am not likely to have space for them, I should like to dispose of them to your Museum, if you find they are of value to you, for the sum of £20 They cost me much more than that in money, time & labour They are here packed in boxes, ready for the New Museum, when it is opened. Most of them are labelled.

I enclose a general description of them as follows:

1 Box of Rocks with a few fossils from Bonn in Germany all labelled, mostly from lower rocks. 98 specimens

1 Box of Minerals & Fossils from Derbyshire Limestone, 186 specimens, many are cut, polished & beautiful not much labelled, but easily recognized

1 Box Minerals from Mt Vesuvius, volcanic with Italian labels.

1 Box mostly from Scotland, a few European, partly labelled.

1 Box Fossils from British Tertiary Formations. partly labelled

1 small Box Fossils from Paris Basin, Belfast, Tertiary

Fig. 3 (continued)

well labelled.

I have the honor to be Sir,

Yours obedtly

David [illegible]

palaeontologists; Charles De Vis (1829-1915) spanning the centuries, Heber Longman (1880-1954) a journalist from Toowoomba, originally from Heytesbury, Wiltshire, Jack T. Woods, present Director-General of Queensland survey and at the present day, Director Alan Bartholomai, Mary Wade and Ralph Molnar.

The few letters researched suggest that it was De Vis who initiated an exchange programme with U.K. museums around 1879 and certainly specimens were purchased from dealer/collectors as well (e.g. fig. 2,3). The specimen to which Robert F. Damon (1845-1929) in his letter of 24.2.1902 (see fig. 2) refers is currently on display. Charles Walter De Vis, B.A. Cantab., became curator in March 1882 on the recommendation of the Reverend J.E. Tenison-Woods. He was born in Birmingham in 1829 and went to King Edward VI Grammar School there. Before coming to the museum he was a journalist in Rockhampton, Queensland. He retired in 1905. He must have intended to build up a standard British reference collection, for at this time much stress was placed on the comparison of Australian faunas with elsewhere and most of the key palaeontologists of the day were of British background.

The collection as it now stands provides only a very sparse representation of British fossils, the main strength being the Carboniferous section, hailing mostly from Northumberland, N. Staffs, Derbyshire and S. Wales. There is only a small Lower Palaeozoic section, mostly Silurian. Another interesting Palaeozoic fauna is that from the Permian reef of the North-East (Durham and Tyne & Wear), which probably also came from the Hancock Museum William Dinning and J.W. Kirkby collections but could have come from Sunderland Museum. I have no information on F.P. Lucas who apparently donated much of the collection but he may have lived in the last century and acquired specimens from such collectors as John Ward (1837-1906) and Samuel Carrington (1798-1870). Small collections and single specimens have been donated over the years by British emigrees and visitors, or Australians who have collected in, or exchanged with the U.K. Further research into the early registers and archives will hopefully give more information on the origins.

Refs.

George MACK, 1956. The Queensland Museum 1855-1955, Mem. Qld. Mus. XIII pt II, 107-24.

M.J.F. BOYD & Susan TURNER, 1980. Catalogue of the Carboniferous Amphibians in the Hancock Museum Newcastle upon Tyne. Trans. Nat. Hist. Soc. Northumbria, 46, 1-24.

Susan Turner.

Queensland Museum,
Gregory Terrace,
Fortitude Valley,
Queensland.
Australia, 4006.

AMMONITES IN ARCHITECTURE
by Michael Kerney

Dr. Gideon Mantell (1790-1852) was one of the pioneers of geology, perhaps best remembered today for his discovery of the dinosaurs. His house in Lewes High Street (Castle Place, No.166) will be known to many visitors to that attractive town: its handsome Regency facade has pilasters whose capitals bear curious pseudoionic volutes in the form of pairs of ammonites (or rather of ammonite impressions) placed back-to-back. The generally accepted story, as given by Spokes (1927) and Curwen (1940,pl.2) is that Mantell himself designed the facade. The presence of similar capitals in houses in Brighton, where Mantell later moved, has given further circulation to this idea. The true story is rather different.

The 'ammonite order' was invented by the London architect George Dance (1741-1825) and first used in 1788 in the facade of his long-demolished 'Shakespeare Gallery' in Pall Mall (illustrated in Stroud, 1971, pl.53b). One may speculate that he came by the idea in the following way. The classical ionic volute was believed by some 18th century writers, such as the architect John Wood of Bath (1741), to have been derived from coiled rams' horns, like those traditionally assigned to the god Jupiter Ammon. On the other hand Dance's contemporary Giovanni Battista Piranesi had more recently argued at some length that mullusc shells ('periwincles') may instead have been the inspiration (1769, p.20). The fact that the term ammonite (from cornu Ammonis, the horn of Ammon) had been used for the shells of fossil cephalopods may well have brought about the neat association of these two ideas in Dance's mind. Dance's ammonites are stylized, but significantly have strong 'capricorn' ribbing (caper, a he-goat, + cornu, horn) as found in, say, the Liassic ammonites Echioceras or Androgynoceras. A feeling for the primitive, which strongly affected many English and French architects of the period, must also have played a part: what could be more 'primitive' than an ammonite?

Dance's pupil Sir John Soane praised the invention highly in his Royal Academy lectures in 1810 and several English Jurassic ammonites may indeed still be seen among the classical fragments used as teaching material in Soane's house in Lincoln's Inn Fields (now the Soane Museum). Soane himself does not seem ever to have employed the motif, though it was used, about 1818, on a group of buildings in old Regent Street probably (though not certainly) designed by the great John Nash. These were demolished about 1920.

Castle Place, Lewes, is said to have been built soon after 1806 by Amon Wilds (c.1762-1833), a local architect and builder (Colvin, 1978). Contrary to statements by Pevsner (in Nairn and Pevsner, 1965, pp.64, 557), its present facade must however date from 1819 when, as Mantell's journal records, he acquired the house adjoining his own and converted the two into a single residence with a common front. The architect for these alterations is likely also to have been Wilds, to whom a purchase payment of £600 is recorded in May 1819 (Spokes, 1927, p.5; Dale, 1947, p.25). Possibly Mantell suggested the ammonite idea, but its sophisticated professional execution must surely be ascribed to Amon Wilds, whose unusual christian name no doubt made particularly receptive to Dance's invention. It is quite clear that the details of the capitals were copied either from the Shakespeare Gallery, or from the new buildings in Regent Street.

Wilds's son and partner, Amon Henry Wilds (c.1790-c.1850) had an extensive practice as an architect in Brighton after 1820 (see Dale, 1947) and was responsible for a number of terraces there in which the ammonite order is used (e.g. Hanover Crescent, 1822; Oriental Place, 1825; Western Terrace, 1827; Montpelier Crescent, 1843). The motif also appears framing a plate in Pugin's Contrasts (1836), satirizing the decadence of current architectural practice. It seems to be very rare outside Brighton. It occurs in a house of about 1830 in Tunbridge Wells (Newman, 1969), and in a small terrace and an adjoining group of charming stucco cottages of about the same date in S.E. London, now derelict: Nos. 864, 866, 880-884 Old Kent Road and Nos. 6-12 New Cross Road ('Carlton Cottages'); the last are illustrated in Cruickshank and Wyld, 1975, p.80. The architects of all these are unknown, though it is tempting to seek some connection with Brighton and A.H. Wilds.

I should like to hear of other examples of the ammonite order known to readers, or to receive further information about its connection with the Wildses, father or son.

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*These books contain illustrations of the ammonite order.

Michael Kerney,
Geology Dept.
Imperial College,
London SW7 2BP.

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LOST AND FOUND
compiled by Hugh Torrens

Editors note

The missing Lost and Found section (See Geological Curator, 3 No.s 2 & 3 p.68) has now been found. The items will appear in the next issue of the Geological Curator.

The four appeals which did appear (on pages 162-3) have been assigned numbers 118 to 121 and the sequence re-commences here with 122. Any information relating to the present or past appeals will be gratefully incorporated into future issues.

1. Items and information SOUGHT

122. PLASTER CASTS OF THE CHEQUERBENT FOSSIL TREE.

Circa 1910 a large lepidodendroid trunk was found in the roof of the Arley Seam of Chequerbent Colliery near Bolton. The appended broadsheet was circulated by the local dealer James Lomax, who studied the tree in situ and removed it, in museum sized pieces, presumably for sale. Sets of plaster casts were also offered, showing the trunk surface at various intervals along its length. Bolton and Manchester museums are known to have received pieces of the tree and plaster casts. Doubtless others were distributed and I would very much like to locate them. Our example was received in 1911; please check your registers!

Description of a Fossil Tree from Hulton Collieries.

The Stem, of which this is a portion, was found flat in the roof of the **Arley Mine, Chequerbent, Near Bolton.** It was uncovered for a distance of 114 feet. To this length it was straight, and without branches. A further portion was seen associated with numerous foliage and other branches, the total length from the base over all being upwards of **130 feet.** This portion was taken 50 feet from the basal end. The height of this large tree, when alive and erect, would be more than **114 feet** to the crown, or where the branches commenced to be given of, the upper portion being at least one-third more, making a total height over all of 160 feet ; the diameter at the base was about **2 feet 6 inches,** and at a distance of **114 feet** from the base **1 foot 4 inches.**

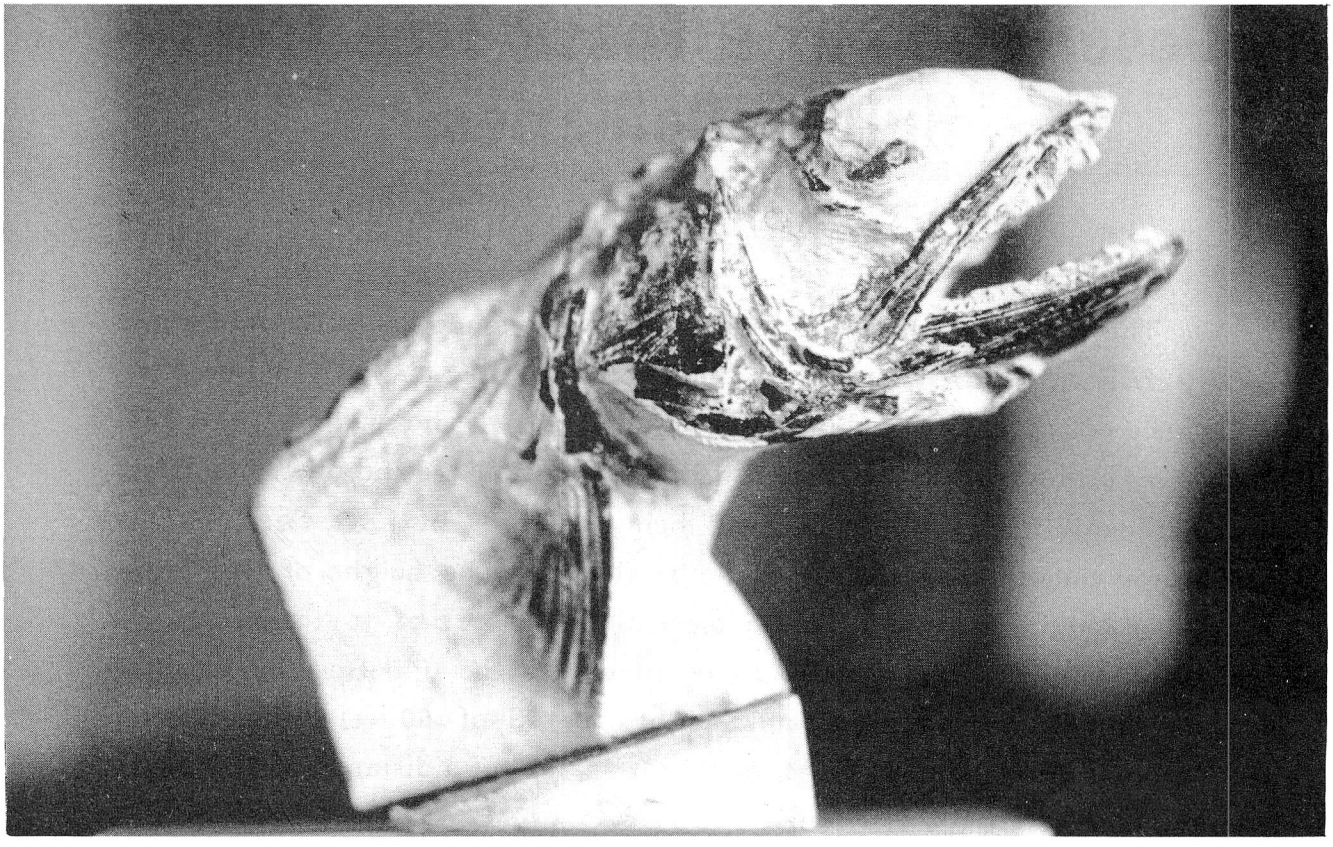
The Specimen represents the inner part of the cortex or bark, the outer portion with the leaf-bases being converted or carbonised into a thin layer of Coal, which alone represents the outer form of the trunk and leaf-bases. The markings of these, in places, are well-preserved, plaster casts of some are in the Case numbered 1 — 13

The orentation on the stem and leaf-bases vary very much in size and form from the base upwards, those from the upper part showing that it was a **Lepidodendron aculeatum** or **obovatum,** a genus of fossil plants allied to the existing Lycopods, such as the recent Club-mosses and Selaginellas. Amongst the foliage was found several specimens of **Lepiodostrobus Hibbertianus,** being probably the fructiferous cone of this or a similar specimen.

Alan Howell, Bolton Museum.
Le Mans Crescent,
Bolton.
Tel: 0204 22311 ext. 361.

123. PREPARED FISH SKULL FROM THE CHALK.

A finely prepared specimen of Halec eupterygius, a fish of the English Chalk of Sussex and Kent. This fish skull was recently brought in to us and may be from an old museum collection in the opinion of the British Museum staff. If anyone recognises this particular example please contact Mr. J.F. Skinner at Southend Central Museum, Victoria Avenue, Southend-on-Sea, SS2 6EX. Tel: 0702 330214.



124. AUSTRALIAN MATERIAL IN BRITISH MUSEUMS.

In response to the letters on this subject in the Geol. Curator (vol. 3 no. 1 pages 60-61) Alan Howell has sent in the following:

Australian material at Bolton Museum

In 1900 Bolton Museum received a consignment of Carboniferous and Permo-Carboniferous fossils from Australia which were obtained in exchange for 45 fossil plant thin sections and 12 coal-balls. The slides and coal-balls had been originally supplied to Bolton by the preparator James Lomax, for the sum of £5.00.
The Australian exchange was apparently negotiated with E.F. Pittman, 'Government Geologist' of the Geological Survey, New South Wales. His letter acknowledging receipt of the Lomax material, dated 25th September 1900, is still preserved at Bolton, and it acknowledged an inbalance in terms of value, with the material sent to Bolton in exchange. This was duly picked up by our curator (Thomas Midgley) who wrote to Australia asking for more material to redress the balance. This seems to have been accomplished in 1907 when a further 24 fossils were received together with various memoirs on New South Wales geology.

A list of the Australian material sent to us is in preparation and will be supplied to interested parties on request. We would appreciate a list of the Lomax sections and specimens sent to Australia - as none exists at Bolton. Sue Turner tells me by letter that they should be now in the Australian Museum, Sydney.

The monographs sent to us in 1907, together with the second batch of fossils, are all Palaeontology Memoirs of the Geological Survey of New South Wales:- No. 3; Feistmantel, O., 1889, Geological and Palaeontological Relations of the Coal and Plant-bearing beds of the Palaeozoic and Mesozoic Age in Eastern Australia and Tasmania; with special reference to the fossil flora. This seems to have been brought to press in 1889 by R. Etheridge Jnr. who points out that Prof. Feistmantel's involvement with the work had ceased in 1887. No. 5; Etheridge, R. Jnr., 1891, A Monograph of the Carboniferous and Permo-Carboniferous Invertebrata of N.W. Wales, Pt. I Coelenterata; 1892, pt. II, Echinodermata, Annelida & Crustacea.

No. 6; Koninck, L.G. de, 1898, Description of the Palaeozoic Fossils of New South Wales.

Alan Howell,
Bolton Museum,
Le Mans Crescent,
Bolton BL1 1SA.

125. CALVERT JOHN (1811 - 1897)

The Smithsonian acquired the John Calvert collection of minerals, shells, and fossils from a New York mineral dealer in 1939. Although some of the specimens have numbers on them, the catalogue or catalogues were not with the collection, and the dealer did not know of their whereabouts. Calvert, who actively bought specimens, purchased the Acton fossil collection no. 128, and many of the fossils figured in Buckland's Bridgewater Treatise; two specimens from the latter collection are here at the USNM:

Acrodus nobilis Agassix, USNM 16114, Buckland's pl. 27[e]
Ptychodus polygyrus Agassiz, USNM 16113, Buckland's pl. 27[f]

Enclosed is a list of the catalogued fossil vertebrates from the Calvert collection (see found section) many other uncatalogued specimens are interspersed throughout the taxonomic collection.
I would be grateful to hear from anyone who has information about Calvert's collections or those which he purchased.

Robert W. Purdy,
Museum Specialist,
Dept. of Paleobiology,
National Museum of Natural History,
Smithsonian Institution,
Washington DC 20560,
U.S.A.

see also Found Section (No. 125) and also under SAULL W.D. (No. 126) Burgon J.T. (No. 127)

129. TYPE, FIGURED AND CITED SPECIMENS IN THE GEOLOGICAL COLLECTIONS OF THE DORSET COUNTY MUSEUM.

Work is now well advanced in the assessment and accessioning of collections which are known to contain type and figured material. Extensive literature searches have permitted the recognition of many specimens but there remains a strong chance that material may have eluded this and earlier searches, especially specimens studied and perhaps figured or referred to by the present generation of palaeontologists.

The discovery in the latter half of 1981 of the missing Holotype of Nuthetes destructor Owen, 1854, (a small dinosaur) in the collection at Dorset County Museum emphasises the mystery (!) which surrounds much of the historic collection.

Anyone knowing of type, figured, or cited material which is reputed to be in the Dorset County Museum or who have themselves worked on and published accounts of specimens are invited to send details.

Please address correspondence to P.C. Ensom,
Assistant Curator,
Dorset County Museum,
DORCHESTER. DT1 1XA. (0305) 62735.

LOST AND FOUND
2. Items and information FOUND

4. BRIGHT BENJAMIN HEYWOOD (1787 - 1843)

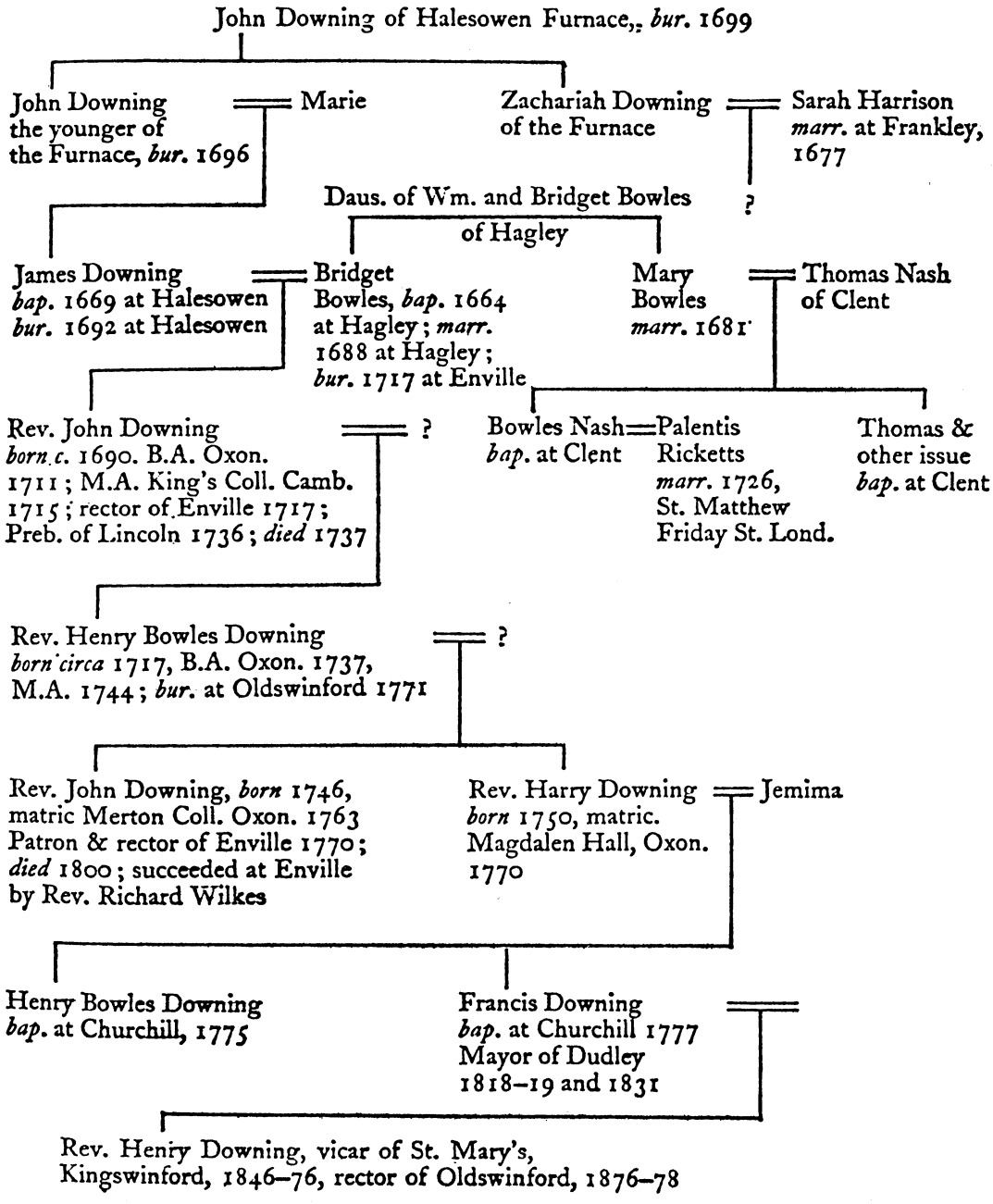
One of the appeals for lost fossil collections in our very first issue of the Newsletter (vol. 1, no. 1. p.18) related to this collector. It is therefore a pleasure to record in these columns a recent highly relevant papers by R.M. Kark and D.T. Moore 1981 "The life, work and geological collections of Richard Bright M.D. (1789 - 1858); with a note on the collections of other members of the family" in Archives of Natural History 10 pt. 1. pp. 119-151. This discusses the complex history of the Bright family collection, its evolution and dispersal. There is some evidence to suggest (Moore, 1981 p.141) that the man sent to retrieve the collection from Winchester in 1873 for the British Museum, was both more interested and impressed by the minerals in the collection than by the fossils of which he wrote "I have seen very few fossils worth having, many I have taken the liberty (!!) of throwing away, knowing them to be absolutely worthless to any collection". The whole letter from which this is quoted is a most revealing one, in a more conservation conscious world one hundred years later, for the letter adds that the house near Winchester whence the collection was being removed had been purchased about 1870 by Lord Ashburnham from the Bright family and his lordship "uses the old house as a quarry whenever he wants bricks or stone for building purposes"!!

55. DOWNING FRANCIS (1777 - 1857)

At the risk of purveying trivia, and somewhat non-geological at that, we can report the following information about Francis Downing who helped Sir Roderick Munchison with the production of The Silurian System. 1839.

The family tree below comes from a study by Johnson Ball of the printer William Caslon 1693 - 1766 published in 1973 by the Roundwood Press, Kington (page 55), and gives Francis Downing's year of baptism in 1777.

The Downings of Halesowen Furnace



A recent visit to Dudley Public Library showed Downing was mayor of Dudley twice and was very involved in the local politics of the time. Dudley Library have a number of political handbills relating to his mayoralties, one of which is reproduced here.

TO

Francis Downing, Esq.

MAYOR OF DUDLEY.

We the undersigned, request you will call an early Meeting of the principal Inhabitants of the Town and Parish of Dudley, for the Purpose of forming a SOCIETY for the SUPPRESSION OF BLASPHEMY AND SEDITION.

DUDLEY, December 4, 1819.

L. Booker
Thomas Hawkes
Edward Dixon
Proctor Robinson
David Edwards
Thomas Dowty
John Aikenhead
Joseph Green Bourne
John Roberts
Thomas W. Hodgetts
Thomas Wainwright
T. O. Chinner
Thomas Stiles
Thomas Badger
William Sprigg
Joseph Cox
Isaac Badger
Joseph Payton
Joseph Haden
Edward Guest
Thomas Bunn
Alexander Gordon
John Scarlet Turner
C. H. Molineux
B. Stinson.

In Compliance with the above respectable Requisition, I hereby appoint a Meeting of the principal Inhabitants of the Town and Parish of Dudley, to be held at the Town-Hall, on TUESDAY next, the 14th Instant, at Eleven o'Clock.

FRANCIS DOWNING.

Dudley, December 8, 1819.

J. RANN, PRINTER, DUDLEY.

Perhaps in these present tiresome times the Society for the Suppression of Blasphemy and Sedition should be re-incarnated?!

Downings death on November 19th 1857 "at Winson Green (Birmingham) in his 81st year and late of Dudley" was reported in both the Wolverhampton chronicle (November 25th 1857, p. 4), and the Dudley and Midland Counties Express (November 28th 1857, p. 174). No mention is made of any family fossil collection and the fate of this is only likely to be elucidated by study of the relevant wills.

90. LAVIN'S MUSEUM, PENZANCE.

Victor Adams of Blandford kindly sent in the advertisement below:-

CORNWALL MINING DISTRICT.

MINERALOGY AND GEOLOGY.

LAVIN'S MUSEUM, CHAPEL STREET, PENZANCE.

THE LIZARD SERPENTINE ORNAMENTS.

VIEWS, HANDBOOKS, POCKET-MAPS, ETC.

STUDENTS of Mineralogy and Geology, and Tourists to the Scenery, Antiquities, and Mines of Cornwall, will be interested by a visit to this Museum. The Collection of Cornish Minerals is unique, and contains specimens of the most interesting and rare substances, with perfect crystallizations, for which the above County has been so justly celebrated.

100 Minerals scientifically arranged in a case, with descriptive Catalogue, from 1*l.* to 3*l.* Larger Specimens neatly set in a Mahogany Cabinet, from 5*l.* to 10*l.* More extensive Selections and first-rate Specimens from 20*l.* to 50*l.* and upwards.

Geological Selections, comprehending Specimens of the various Rocks of the County, from 1*l.* upwards.

☞ A specimen of Carbonate of Iron, from Wheal Maudlin Mine, for which the sum of 130*l.* has been refused; as well as a great many others, presumed to be unrivalled.

Agent for the sale of Articles manufactured by the LIZARD SERPENTINE COMPANY (under the Patronage of Her Majesty the Queen, etc.),

Comprising Chimney-pieces, Columns, Balustrades, Fonts, Obelisks, Vases, Chalices, Hebe Jugs, Thermometers, Inkstands, Candlesticks, Toilet Bottles, Ringstands, &c. &c. No material, British or Foreign, equals this stone, either in brilliancy of colour, or in elegance of appearance.

VIEWS, HANDBOOKS, POCKET-MAPS, &c.

Prompt attention given to all Orders from a distance.

OXFORD lies on the road to Bath, Bristol, Clifton, and the West of England; to Leamington, Warwick, Kenilworth, Stratford-on-Avon, Birmingham, Worcester, Wolverhampton, Chester, Manchester, Liverpool, and the North; to Cheltenham, Gloucester, and South Wales. In its neighbourhood are Blenheim, Nuneham, and other places of interest.

VISITORS TO OXFORD

(a central point for Railway Travellers) are invited to inspect

SPIERS AND SON'S ESTABLISHMENTS,

102 & 103, *High St.*, 45 & 46, *Cornmarket St.*, and 28, *Ironmonger St.*,

Where will be found one of the largest and most varied Stocks in the kingdom of USEFUL AND ORNAMENTAL MANUFACTURES, suitable for Presents, or for Remembrances of Oxford.

At the Great Exhibition in London, of 1851, and in Paris, of 1855, 'Honourable Mention' was awarded to their Papier Mâché Manufactures; and at the New York Exhibition of 1853, the 'Prize Medal.'

It came from 'A Handbook for Travellers in Wiltshire, Dorsetshire, Somersetshire (etc.) published by John Murray, London 1859.

112. ABBOTT W.J. LEWIS (1853 - 1933)

Gordon Chancellor of the Dept. of Geology and Mineralogy, University of Oxford points out that this collector of whom Susan Turner seeks information (Geological Curator vol. 3, no. 1. p.21) has an intersting niche in the Piltdown saga.

J.S. Weiner's book The Piltdown Forgery (Oxford University Press 1955) discusses his part in the Piltdown epic, in some detail (p. 60, 96-103, 109, 113-4, 127-9, 149-50, 183-5.) and calls him "a little dark, black bearded man (who) was regarded almost as the oracle on everything that pertained to the geology of the south-east England". His real role in the saga was to bring Charles Dawson's attention to the existence of the antique gravels at Piltdown in the first place, see also Ronald Miller 1974 The Piltdown Men. A case of Archaeological Fraud. (Paladin publishers, London p.94)

125. CALVERT JOHN (1811 - 1897)

The list of catalogued vertebrate fossils from the Calvert collection in the U.S. National Museum of Natural History referred to by Robert Purdy on page 236 is given here.

Calvert Collection

USNM	Name	Locality	Orig.No.	Morphology
15986	Chaeropotamus cuvieri Owen, cast	Seafield Benstead Isle of Wight		right mandible
15987	Palaeotherium			left hind limb
15988	Phyllodus medius Ag.	Sheppy, England		lower phary. dentit.
15989	P. medius Ag.	"		"
15990	P. sp.	"		tooth
15991	Ptychodus sp., cast	Flint, Suffolk, England		palatal tooth
15992	P. polygyrus Ag., cast	Heytesbury, Wilts		"
15993	Lepidotes mantelli Saw	Wealden	1131	palatal plate
15994	L. mantelli Saw	Wealden	1132	6 teeth
15995	Myliobatis sp.	Sheppy, England		imperfect dentition
15998	Cephalaspis lyelli		1597	head
15999	Holoptychius	Orkney	1604	skeleton on slab
16098	Steneosaurus durobrivensis Geoffrey	Peterborough?, England	82	rostrum, vertebrae + limb bones

USNM	Name	Locality	Orig.No.	Morphology
16099	Teleosaurus cadomensis Suley			skull & jaws
16100	Ophthalmosaurus icenicus Suley	Peterborough?, England		right fore paddle
16102	reptile			skeleton on slab
16103	reptilian	Suffolk, England		dermal scute
16106	Rhizodus sp.	nr. Glasgow,		scales
16107	Pistosaurus longaevus (Meyer)			skull
16108	Dapedius punctatus	Lyme Regis, England	11	skeleton
16109	Lepidotes maximus	England?		teeth
16110	L. mantelli	England		teeth
16111	Palaeoniscus comptoni	Hinkley,* Durham, England		skeleton on slab
16113	Ptychodus polygyrus (coll. Miss F.C. Burgon cabinet of J.T. Burgon, Esq.)			teeth
16114	Acrodus nobilis Ag. (coll. Miss C.S. Burgon cabinet of J.T. Burgon, Esq.)	Somersetshire, England		series of teeth.
16115	Gonipholis crassidens		1129	2 teeth
16116	Leuciscus minimus	St. Aninden	1302	skeleton
16117	Carcharodon megalodon	Felixstowe		tooth
16121	Psephodus magnus	Armagh, Ireland	1304	tooth
16122	P. obliquus	Armagh,Ireland	1305	tooth
16123	Psammodus rugosus	"	1303	"
16124	Ctenoptychius serratus	"	1308	"
16125	Helodus gibberulus	"	1313	"
16126	H. didymus	"	1314	"
16127	H. planus	"	1315	"
16 128	Chlomatodus truncatus	"	1316	"

* Editors note. This is probably a mis-spelling of Thickley (Quarry), Co. Durham the source of many fine Permian fish.

USNM	Name	Locality	Orig.No.	Morphology
16129	Petalodus saggitatus	"	1306	"
16130	Poecilodus jonesii	"	1310	"
16131	P. transversus	"	1312	"
16132	P. obliquus	"	1312	"
16133	Orodus ramosus Ag.	Oreton Salop, Ireland (Sic)	1317	"
16137	Holoptychius leptopterus Ag.	Lethen Bar Mora, Orkney Isles		partial skeleton
16138	Pelagosaurus sp., cast			Skull
16139	Ichthyosaurus tenuirostris, cast			skull, jaws, pectoral girdle paddle
16140	Asteracanthus sp.			part of fin spine
16141	Hybodus sp.			fin spine
16142	Acondylacanthus? colei? Davis?		41	fin spine
16143	Acanthodeus pusillus		1598	skeleton
16144	Leptolepis sprattiformus Ag.	Germany		skeleton
16145	Pteraspis sp.		1596	shield
16146	Cheirolepis trailli Ag.	Orkney Isles		skeleton
16147	Otodus appendiculatus	Cambridge, England	944	teeth
16148	Cheirocanthus microlepidotus	Tynet Burn Scotland	1599	part of skeleton
16149	C. latus	"		skeleton
16151	Orig. Cheiracanthus Ostrolepis cf. macrolepidotus Ag.	Cromarty, Scotland	1600	"
16152	O. sp.	Orkney Isles		"
16153	Polyptychodon interruptus	Cambridge, England	581	2 teeth
16154	P. interruptus	"	948	2 teeth

USNM	Name	Locality	Orig. No.	Morphology
16155	Otodus lanceolatus	England		tooth
16165	Diplacanthus striatus	Tynet Burn, Scotland		partial skeleton
16166	D. striatus	Lethen-Bar, Scotland		"
16167	Cheirolepis trailli Ag.	Tynet Burn, Scotland		"
16316	Lepidotes Leedsi? Woodw.	England		"
16542	Edaphodon sedgwicki (Agassiz)	Cambridgeshire, England	573	mandibular tooth
16543	Asteracanthus ornatissimus Ag.	Polton, Bedford, England	659	part of fin spine
16544	A. ornatissimus Agassiz	"	660	"
16546	Sphaerodus gigas	"	1039	palatal teeth
16547	Edaphodon sp.	"	949	jaw
16553	Palaeophis sp.	"	202	vertebra
16597	Rhizodus hibberti Ag.	British Isles	1470	jaw

Calvert is one of the more colourful characters to appear in C.D. Sherborn's 1940 book where is the --- collection. (Cambridge). We can do no better than to reproduce the entry from this source which was itself reproduced in J.R. Norman's fascinating biography of 1944. Squire, Memories of Charles Davies Sherborn. (George Harrap & Co. London. p. 82.) as a sample of what this volume contains.

> CALVERT, JOHN. There were two J. C.'s, one a silver miner of Vasi Rupi. The other was a mining engineer whose life was published in *The Mining Journal* about 1905. He was an unscrupulous blackguard. He seduced two of the S . . . girls, one of whom I knew as an elderly woman who eked out a poor living in Drury Lane by selling shells. I found her later on in Chelsea, and learned that "Jack" allowed her a small pension. He was in London in 1905 scheming to involve H. P. Woodward in some rotten mining plans, but a cable to Westralia frustrated him. He was some connexion of Lord Baltimore, and said to have his colls. His coll. offered the B.M. in 1938 and included the W. D. Saull coll. which he appropriated from the Metropolitan Inst., Cleveland Street, Fitzroy Square, seven vanloads. Of this coll. the B.M. bought a few in 1866, some of which were labelled by James Sowerby, but it is doubtful whether any were types of figured. The bulk was stored for over twenty years in a house from which cobwebs and dirt had to be swept away (*Star* 23 Aug. 1938) and was acquired later, I believe, by H. E. H. Smedley for Tottenham Castle Mus. J. C. had Sales, see *Nature*, Oct. 1897, p. cxcv; *Ath.* Oct. 1897, 543 and 1898, 82. A catal. of the coll. in 1905 (?) is in the B.M. For other particulars see *Phil. Mag.* n.s. x. (57), Sept. 1831, 237; *Bull. Soc. Geol. France*, vii. 1835 (1836). 49; *The Geologist*, 1860, p. 3 of May wrapper.

Sherborn's account seems somewhat inconsistent and it would be valuable to confirm that there were indeed two John Calverts; one a silver miner, and the other a mining engineer. I suspect they may prove to be one man only and be the John Calvert born 1811 who died in 1897.

His enormous collection was sold in part at Stevens' auction rooms London in 1897 and 1898. Chalmers Hunt (1976) gives details of 3 known sales (out of at least five) held between November 8th 1897 and July 19th - 20th 1898, of which only copies of part 5 survive. The same year a pamphlet listed in the American National Union Catalogue was also published as follows:-

The National Union Catalog Pre-1956 Imprints

Calvert, John, d.1897.
A resumé of few of the specialities contained in the museum and libraries chiefly collected by Mr.John Calvert, etc. A large portion in Museum House, 72 Caversham Road, London, N.W.
London, 1897.

10 p. 4°.

NC 0055675 MH-Z

The catalogue of the collection mentioned by Sherborn above is in the British Museum (Natural History) library as the following entry from the library's published catalue (vol. 6. 1922) shows:-

CALVERT (JOHN) [1811-1897] Particulars of the Calvert Museum ... considered by good judges to constitute the finest private collection of Shells and Minerals in the world. [Collected by J. Calvert.] *pp. 46 [1] : 16 pls.* 8°. [*Taunton*, 1905?]
The plates are included in the pagination.

The date of 1905? assigned to it however needs to be confirmed.

Thereafter the collection which had not been dispersed by the above mentioned auction sales gathered cobwebs and dust until 1938. The British Museum (Natural History) were then offered the collection but in the (now apparently unwarrented) belief that it contained no type or figured specimens turned it down.

S.P. Dance gives details of the collections subsequent history in his 1966 book Shell Collecting: An Illustrated History (London Faber and Faber) p. 216 and 282 as follows:

"One of the principal purchasers at the Barclay sale (in 1891) was John Calvert, a mining engineer who devoted much of his time to collecting shells and other natural objects; he paid £54 16s. for eighty one lots. In 1939 his huge collection of shells, minerals and fossils was bought, for about $20,000, by an American dealer who took several years to dispose of it. Today Calverts shells may be seen in collections all over the United States. Many of his shells are now in New York Museum, for details see d'Attilis 1950, New York Shell Club Notes No. 2."

It was obviously part of this final deal which brought a part of the Calvert collection of fossils to the National Museum of Natural History in Washington. Equally obviously Robert W. Purdy's enquiry has brought one of the Museum World's real characters temporarily to the surface. Any information, whether leading from references given here or elsewhere, will be gratefully received both by the U.S.N.M. and these columns for a future issue.

126. SAULL WILLIAM, DEVONSHIRE (1784 - 1855)

The notice about the John Calvert collection (No. 125) on p. 236 refers to the fact that it included the collection of W.D. Saull. It is worth putting on record the following reference which is quoted from the London and Edinburgh Philosophical Magazine (vol. 7 1835 p. 431).

MR. SAULL'S GEOLOGICAL COLLECTION.

We are informed that Mr. W. D. Saull, F.G.S., &c., having recently erected a building to contain his Geological Specimens, including also those that were in the collection of the late Mr. Sowerby, is desirous of informing scientific gentlemen, and his friends generally, that the entire collection is now stratigraphically arranged, and that the Museum is open for inspection every Thursday morning, at Eleven, at his residence, No. 15, Aldersgate-street, City.

October 20, 1835.

which announces the opening of Saull's Geological Museum in 1835. By 1855 John Timbs referred to the Museum thus in his Curiosities of London (London David Bogue) p. 542.

SAULL'S MUSEUM, 15 Aldersgate-street, is a private collection, which the proprietor liberally allows to be inspected on Thursdays, from 11 A.M. The *Antiquities*, principally excavated in the metropolis, consist of early British vases, Roman lamps and urns, amphoræ, and dishes, tiles, bricks, and pavements, and fragments of Samian ware; also, a few Egyptian antiquities: and a cabinet of Greek, Roman, and early British coins. The *Geological Department* contains the collection of the late Mr. Sowerby, with additions by Mr. Saull, F.G.S.; together exceeding 20,000 specimens, arranged according to the probable order of the earth's structure. Every article bears a descriptive label: and the localisation of the antiquities, some of which were dug up almost on the spot, renders these relics so many medals of our metropolitan civilisation.

Its history thereafter can be best described by the following extracts: The first comes from the Dictionary of National Biography:-

SAULL, WILLIAM DEVONSHIRE (1784–1855), geologist, was born in 1784, and was in business at 15 Aldersgate Street, London, which also was his residence. He accumulated there a large geological collection, together with some antiquities, most of the latter having been found in the metropolis (cf. TIMBS, *Curiosities of London*, p. 600, 2nd edit.) He was elected F.G.S. in 1831, and F.S.A. in 1841; he was also F.R.A.S., and a member of other societies, including the Société Géologique de France. He read papers to the Geological Society in 1849, and to the Society of Antiquaries in 1841, 1842, and 1844; but they were not printed, for he was more enthusiastic than learned. His essays (*a*) on the coincidence of, and (*b*) on the connection between, 'Astronomical and Geological Phenomena' (published in 1836 and 1853 respectively) indicate the peculiarity of his opinions. He also republished—adding a preface—'An Essay on the Astronomical and Physical Causes of Geological Changes,' by Sir Richard Phillips [q. v.], attacking Newton's theories of gravitation. It was answered by Sampson Arnold Mackey in a 'Lecture on Astronomy,' 1832. He died on 26 April 1855.

[Obituary notice in Gent. Mag. 1855, ii. 102.] T. G. B.

The second from the History of the Collections contained in the Natural History Departments of the British Museum. vol. 1. 1904 p. 322 (Geology)

> Saull (William Devonshire)
>
> A merchant in the City of London, Saull accumulated at 15, Aldersgate Street a remarkable collection of fossils and antiquities, spoken of by Mantell as "his interesting museum, to which visitors are, with great liberality, admitted every Thursday at twelve" ("Geol. I. of W.," Ed. iii., p. 232; 1854). The owner himself personally conducted the visitors, and such was his zeal for popular education that he left the collection with all his money to a body of trustees so that it might be kept for the public. The trustees founded the Metropolitan Institution in Cleveland Street, Fitzroy Square, and transferred the collection thither, packed up in wine-hampers. In those hampers it remained, while the money was devoted to carrying on a school, which gradually became little more than a place of evening amusement for the young men and women employed at large shops in the neighbourhood. The collection proving a difficulty, the trustees decided to sell it, and were engaged in so doing in 1863, when Mr. John Calvert took the remaining seven van-loads off their hands. The British Museum had already selected—and paid for—such specimens as could be seen to be still of value in the lamentable state to which the collection had been reduced. Among the 200 fossils thus acquired were the sacrum of the *Iguanodon* and other specimens figured in Owen's "British Fossil Reptiles" (Palæontogr. Soc.), also a large number of Invertebrata named and labelled by James Sowerby, and supposed to include some of the type-specimens of his "Mineral Conchology"; their identification, however, is doubtful.

This second notice refers to the fact that the disposal of the Saull collection was commenced in 1863. One sale of some of Saull's fossils is referred to by Chalmers-Hunt (1976 p. 102) as having taken place at Stevens' Sale rooms in London on June 13th 1863, but again no copy of the relevant sale catalogue has been traced.

127. BURGON JOHN TOWRY (fl. 1836 - fl. 1864)

Robert Purdy's list on pages 242-45 of the catalogued fossil vertebrates at the U.S.N.M. from the John Calvert collection introduces another collection which was incorporated into the Calvert collection, namely that of the Burgon family.

Wm. Buckland figured in his Bridgwater Treatise, Geology and Mineralogy considered with Reference to Natural Theology two specimens from the Burgon collection. These are pl. 27e. figs. 1 - 5, pl. 27f, in the first and second editions vol. 2 published 1836 and 1837 (and in the 1858 and 1870 editions vol. 2, pl. 42, fig. 1, and pl. 43), and are both now in Washington.

The two specimens both came from the cabinet of J.T. Burgon Esq. He is John Towry Burgon whose sale of Fossils and Natural History specimens was held at Stevens' London sale rooms on September 2nd 1864 (Chalmers-Hunt 1976 p. 102) but of which sale no catalogue survives. J.T. Burgon's identity is otherwise unknown.

Buckland's original figures of these two fossils were drawn and/or engraved by one Miss S.C. Burgon according to the footings of the plates in the 1st and 2nd editions. (In the text to these vol. 2 p. 47 - 48 she is also rendered as F.C. Burgon. In latter editions she also becomes V.C. Burgon!). I suspect she may be the daughter Sarah Caroline Burgon (1812 - 1889) of Thomas Burgon (1787 - 1858). Her brother John William Burgon (1813 - 1888) became Dean of Chichester. The following pedigree comes from E.M. Goulburn's biography of John William Burgon, Dean of Chichester London 2 vols. John Murray 1892 (vol. 1, p. 8). The same source confirms he was in personal contact with William Buckland by 1836 (vol. 1, p. 62 - 64).

It may be convenient here to give a pedigree of the descendants of Mr. and Mrs. Thomas Burgon, in reference to the members of the family who are mentioned or alluded to in this narrative, as also to show who are its present representatives.

Thomas Burgon, Esq., *b.* Aug. 1, 1787, *d.* Aug. 28, 1858. = Catharine Marguerite de Cramer, *b.* Aug. 7, 1790, *d.* Sept. 7, 1854.

Sarah Caroline Burgon[a], *b.* July 1, 1812, *d.* Apr. 6, 1889.	JOHN WILLIAM, *b.* Aug. 21, 1813, *d.* Aug. 4, 1888.	Thomas Charles, *b.* June 25, 1816, *d.* Feb. 14, 1872.	Emily Mary, *b.* Feb. 16, 1819, *d.* May 6, 1871.	Helen Eliza[b], *b.* May 28, 1823.	Catharine Margaret, *b.* Oct. 27, 1828, *d.* Apr. 28, 1836.

[a] Married (May 24, 1838) to the Rev. Henry John Rose, Rector of Houghton Conquest and afterwards (1866) Archdeacon of Bedford, who died Jan. 31, 1873. They had five children, four of whom survive,—Emily Susannah, Hugh James [*d.* 1878], William Francis (Vicar of Worle), Anna Caroli: ', Gertrude Mary.

[b] Married (July 26, 1853) to Charles Longuet Higgins, Esq., of Turvey Abbey, Beds.

It is possible that the fossil collector J.T. Burgon was the brother of the above Thomas (1787 - 1858). All this is supposition however, and any further information would be welcome. Presumably John Calvert acquired those specimens figured by Buckland at the auction sale mentioned above in 1864. If an annotated copy of this sale catalogue could be located this again could be confirmed.

Reference.

Chalmers-Hunt, J.M. 1976.

Natural History Auctions 1700 - 1972. A Register of Sales in the British Isles.

London: Sotheby Parke Bernet.

H.S. Torrens,
Department of Geology,
University of Keele,
Keele,
Staffs. ST5 5BG.

LETTER TO THE EDITOR

THE HANCOCK MUSEUM Newcastle upon Tyne NE2 4PT Telephone 0632 22359

Curator AM Tynan BSc FMA
Deputy Curator PS Davis BSc MSc MIBiol AMA FLS

26th February 1982

The Editor
Geological Curator
c/o T. Pettigrew
Sunderland Museum and Art Gallery
Borough Road, Sunderland SR1 1PP.

Dear Sir,

Susan Turner (one-time geological assistant here) left us all a farewell present (GC Vol. 2 Nos. 9 & 10 pp. 621-623) before she left for Australia. The final sentence of her present must have struck terror into the hearts of all readers of this publication, it read: "The Hancock collections remain at risk". The statement was based on a series of readings from gadgets said to record atmospheric humidity. Alas, or may be, whoopee, we are now able to set the record right. Since Susan's departure, and during considerable effort towards organising the storage of the research collection, we have obtained a rather more reliable gadget. So far this has not recorded, even in the most sensitive areas to which she refers, a relative humidity greater than 45%, and at temperatures which look very similar to those recorded in 1978-1980. Notwithstanding the obvious criticism that this current is monitoring a short time-span and a small sample. I thought it worth recording that a miraculous improvement seems to have taken place since 1980.

There is, possibly an unexplored factor. I have curated these valuable collections for over twenty years. Until they were the object of close study in the 1970's almost no serious pyritisation/deterioration was seen.

Could it be the hot passionate breath of these investigators that set in motion the complex and, I believe, imperfectly understood processes which are now said to threaten the future of these important specimens, not to mention "the collections".

Sir, whatever shall we do? Investigate and be pyritised? Why, one is forced to ask was the breath of D.M.S. Watson (dec'd) less vaporous than that of Ms. Turner and her friends?

A complete report on the situation will be prepared when a year's recording has been achieved, but I thought that this brief note might help to allay the anxieties which Sue's contribution created, and took me, like the rest of us, somewhat by surprise.

Yours faithfully,

A.M. Tynan
Curator

SPECIMEN EXCHANGE

UNIVERSITY OF ST. ANDREWS

DEPARTMENT OF GEOLOGY,
PURDIE BUILDING,
ST. ANDREWS,
FIFE, SCOTLAND.
KY16 9ST

TELEPHONE: ST. ANDREWS 76161
CHAIRMAN OF DEPT.: PROF. E.K. WALTON.

21 December 1981

Dr H S Torrens
Geology Department
University of Keele
KEELE
Staffs
ST5 5BG

Dear Dr Torrens

In a time of dwindling resources within geological departments of universities and museums it seems eminently sensible to form self-help exchange schemes. We can no longer afford to buy desired display material and may not be in a position to purchase necessary teaching specimens. However it is still possible to improve our collections if we are prepared to spend some time assessing what is required and what could be offered for exchange.

I would be grateful if you could publish the attached list of material required by the geology department here in St Andrews. We have a wide variety of specimens offered in return and are always willing to negotiate. We are also keen to hear from anyone interested in an exchange scheme even if they cannot help with our current needs.

Yours sincerely

Judith A Kinnaird.

Judith Kinnaird
Curator of Geology

Enc

Material required

Display specimens of:-

- Conularia
- Cystids
- Archaeocyathids
- Stromatoporoids
- Conodonts
- Mounted pollen grains
- Ostracods
- Fenestella or bryozoa

Good samples of:-

- Hypesthene
- Diopside
- Omphacite
- Anthophyllite
- Glaucophane
- Phlogopite
- Periclase

Suites required:

- Ilimaussaq suite or undersaturated suite with associated carbonatites.
- Mexican/Nevada volcanic suite
- Archean rocks 3,000 m.y. in age
- Atlantic oceanic island alkaline suite
- Atlantic continental shelf suite
- Calc-alkaline rhyolitic flows

Material offered

Teaching sets	Teaching material
12 x Lithostrotion Limestone	L. Limestone Group (Carb)
12 x Crinoidal limestone	Siderite nodules with burrows, Fife
12 x Olivine basalt	Stromatolites from Islay
12 x Felsite	Caithness Dipterus or Acanthodian specimens
12 x Andesite (weathered)	
12 x Devonian sandstone	Salite (pyroxene) crystals with curved faces. From S. Uplands.
12 x Calciferous (Carb) sandstone	
12 x Rounded topaz pebbles (for hardness sets)	

Suites offered:-

1 set prehnite/pumpellyite facies (metagreywackes and spilites) from S. Uplands
1 set selected high pressure metamorphic rocks from Alps
1 set kimberlites
1 set selected Niger anorthosites
1 set Rhum cumulates
1 set S. Uplands ore deposits
1 set S. Uplands granites
Suites of Nigerian alkaline rocks.

LOAN OF LUNAR SAMPLE EDUCATIONAL PACKAGES

Science and Engineering Research Council

PO Box 18 Polaris House Swindon SN2 1ET

Telex 449466 Telephone 0793 26222 ext

During the late 1960s and early 1970s in the US National Aeronautics and Space Administration's (NASA) lunar exploration programme, the Apollo astronauts brought back to Earth 382 kilogrammes of lunar material. NASA has used a small proportion of this material to develop lunar and planetary sciences educational packages.

The Science and Engineering Research Council (SERC) in consultation with the Natural Environment Research Council (NERC) has had on loan, since January 1979, a lunar sample package containing thin sections of lunar material, designed for use by educational institutions teaching or popularising the sciences. This package has been lent to institutions within the whole range of secondary and higher education (^{22} Universities, ^{5} Polytechnics, ^{7} Colleges, ^{3} Museums, ^{40} Schools, Societies and Associations).

NASA has now offered the UK an additional thin section package and two packages of encapsulated material. It is expected that this material will be available for loan to educational institutions, for 1 or 2 weeks at a time, from September 1982 onwards.

The lunar sample packages contain lunar rocks and soils specifically selected to be representative of the lunar sample collection:

Thin section packages: these consist of 12 polished thin sections suitable for viewing in transmitted or reflected light. A standard petrographic microscope, using polarised light is needed to examine this material.

A condensed description is provided which describes the thin sections, relates them to the suite of rocks and soils they represent, and attempts to fit them into a broad picture of their relationship with the Moon, what we have learned of it, and what unsolved problems remain. Other background material provided by NERC and SERC will also be available.

Encapsulted packages: These are designed specifically for schools and consist of a disk of clear plastic, six inches in diameter, one inch thick, containing a ½ - 1 gramme sample of each of the following soil types:

(i) Lunar breccia (a broken surface soil type);

(ii) a lunar basalt (solidified volcanic matter);

(iii) a lunar anorthesite (an igneous rock composed of calcium, aluminum, silicon, and oxygen);

(iv) a sample of the Moon's orange glassy soil;

(v) a sample of lunar mare soil;

(vi) and a sample of lunar Highland soil.

A low powered microscope (x10) may be used to provide a greater resolution of the samples, but it is not essential.

A teacher's guide, filmstrip and audio cassette, activity sheets and other background material are available with the package.

Certain security procedures would, of course have to be followed by all borrowers. The borrower will be expected to bear the cost of transporting the package to the next borrower. This cost is not expect to exceed £10 and may be well under this figure. If you are interested in using any of these packages please let me know as soon as possible so that we may gauge the interest in and the damand for the package. Please reply on institution's letterheaded paper.

Yours sincerely,

A.G. Brittain,
Solar System Committee Secretariat.

On the rocks

Chatting with a couple whose teenage son is a keen amateur geologist, his mother confided: "I can't move in his bedroom for samples of rock. But every so often I quietly get rid of a few by tipping them over the garden wall into the lane behind the house." We laughed together but I had a lovely picture of some frustrated geologist of the future trying to justify a find of volcanic rock samples dug from a quiet country lane

REPORT OF THE FOURTH MEETING OF FENSCORE, THE FEDERATION FOR NATURAL SCIENCES COLLECTION RESEARCH

FENSCORE committee met on the 22nd October, 1981 at Manchester University. Present were representatives of the regional Collection Research Units and representatives of the following institutions: British Museum (Natural History), Biological Records Centre, Institute of Geological Sciences, National Museum of Wales, Manchester Museum, Royal Scottish Museum.

The Secretary reported that an updated security copy of the database had been deposited with MDA for safe keeping. The now widely published note requesting information on collections in private hands was meeting an encouraging response. A manual, MANDATA, How to obtain information from the Manchester Museum databases, is being distributed, and includes a section on the Natural Sciences Collection Register.

At the beginning of October, the Collection Register database contained 3253 records, made up of contributions from Midlands CRU (439), North East CRU (75), North West CRU (1221), South West CRU (91), Scottish CRU (78) and Yorks & Humberside CRU (1349). In addition, over one thousand more input sheets had been received since the start of October and are being added to the database. Multiple copies of cross indexed working catalogues for each CRU were distributed to their representatives, to enable them to monitor progress.

Some operational changes are being made at Manchester Museum in the CRU data handling system, to increase efficiency. The principle effect that may be visible to curators is an apparent delay in correcting notified errors - this is because editing work is to be done in larger but less frequent jobs.

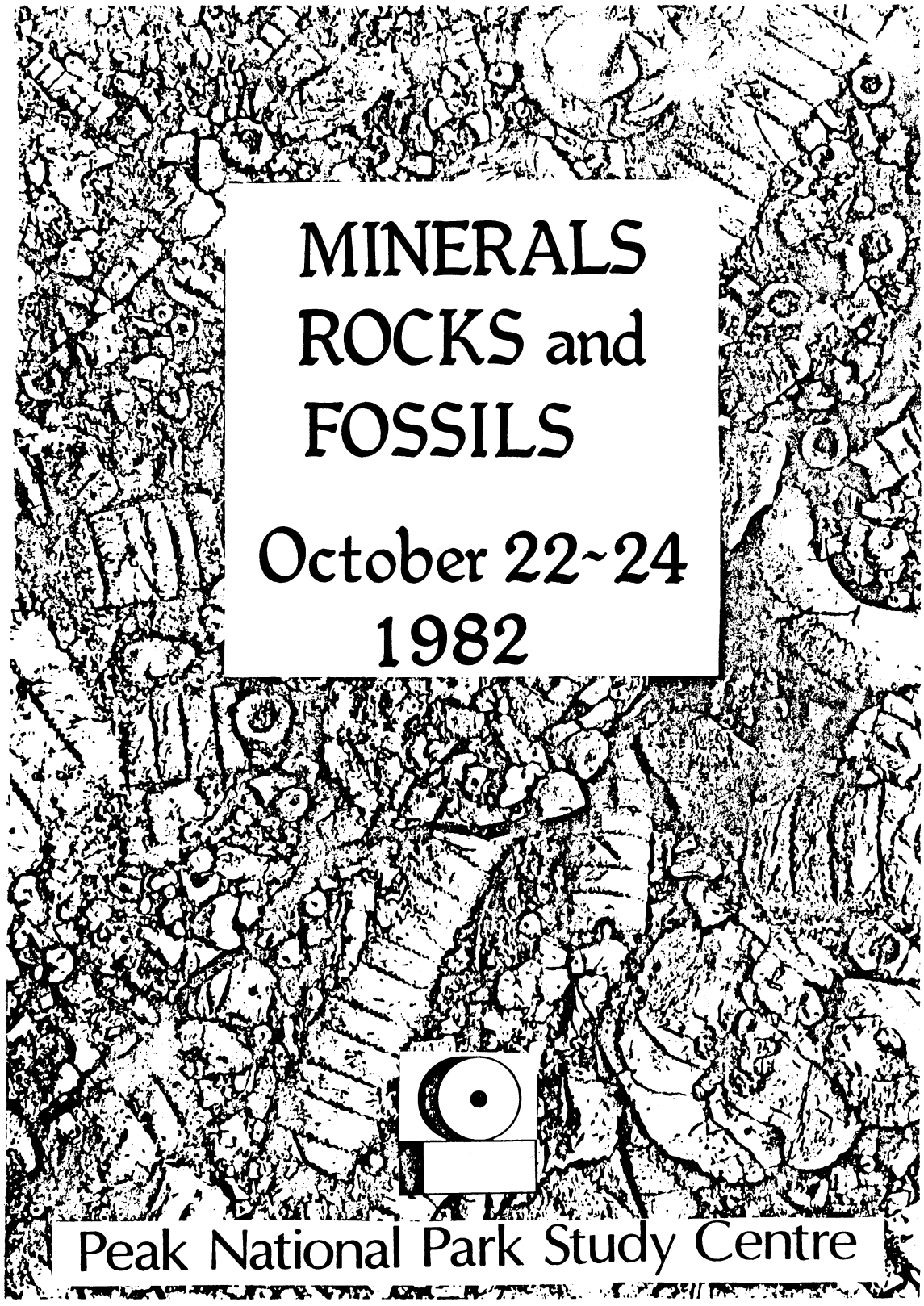
The reports from each of the CRU's showed all to be active, and that the inflow of records could be expected to increase over the next few months; several units were hoping to obtain the use of Manpower Services CEP schemes to assist the work. A common thread to the reports was the firm backing the Units were getting from their respective Area Services/Councils; notable here is the appointment by the Yorks and Humberside Area Service of a peripatetic curator for three months, to complete the work of the YHCRU.

The report of the FENSCORE working party on a register of type and figured specimens held in collections in the British Isles was discussed and confirmed. It was decided that the compilation of such a register was desirable and technically feasible; the major difficulty would appear to be the satisfactory refereeing of data supplied for inclusion in the register. To investigate this problem a pilot study of between one and two thousand specimens was to be done by the NWCRU, with the objective of permitting the Working Party to submit to the FENSCORE meeting scheduled for June 1982, firm proposals for the compilation of the register. To assist this work the Museum Documentation Association offered to computerize the pilot study data without charge, an offer readily accepted by the FENSCORE committee.

The Chairman reported on meeting of the Museums Association Working Party on Collections, and also gave advance information on the conference entitled "A National Plan for Systematic Collections" to be held in Cardiff from 6th to 9th July 1982, and being jointly sponsored by the Biology Curators Group

and the National Museum of Wales.

Charles Pettitt.
Executive Secretary.



For full details of courses and further information please contact the Principal, Peter Townsend, Losehill Hall, Castleton, Derbyshire S30 2WB.
Telephone: Office: Hope Valley (STD 0433) 20373; Residents: 20568.

A NOTE ON THE UNITED KINGDOM INSTITUTE FOR CONSERVATION

by F. Howie

The past eighteen months has seen the publication of two reports highlighting an aspect of fundamental importance to this and future generations of taxonomists, geologists and museum scientists, namely the present poor physical condition of many collections of geological material in the UK.

Firstly State and Status draws attention to the sheer enormity of the problem by stating that '65% of geological collections have no formal curatorial arrangements' and 'that a third of museums admitted that parts of their geological collections are deteriorating physically'. Secondly the Standing Commission on Museums and Galleries in its 1980 Report on Conservation notes 'the threatened disintegration of fossils and other geological specimens, which was attributed partly to unsuitable environment and partly to the absence of qualified staff'.

Both reports recognized the high priority of this aspect and urge and recommend that appropriate action be taken at national and Area Council level. It seems to me, however, that little will be achieved on the conservation front unless or until a greater number than at present of those involved with the ways and means of applying basic principles of specimen care to geological collections come together. Only with a concerted effort will it prove possible, I believe, to demonstrate to governing bodies, etc., that facilities are necessary.

In 1974 the United Kingdom Institute for Conservation published a survey of facilities for conservation in Museums and Galleries. This report contained a specific entry for those afforded to geological collections. Not surprisingly the survey showed a severe shortage of facilities for treating geological and natural history material, and recorded that there were only three specialist geological conservators in employment at the time!

Over the past eight years I would suggest that little change has occurred with perhaps a half-dozen specialist geological conservators and another twenty or so concerned non-specialist conservators now employed in our institutions. Obviously not enough, even if fully employed in their areas of training, to merely more than scratch the surface of the problem.

At the present time the UKIC is actively pursuing the question of improving facilities for the conservation of all types of material and it would perhaps be of mutual benefit for both groups to liaise more closely in future. I would, therefore, urge those working on any aspect of preserving collections, specimens or archives, to consider making use of the well-established facilities offered by UKIC to both Institutions and individuals. The leaflet enclosed with this issue of the Geological Curator outlines the organisation of UKIC. Should members require further information please write to me at the address given below.

F. Howie,
UKIC Committee
c/o Palaeontology Department,
British Museum (Natural History)
Cromwell Road,
London SW7 5BD.

RECENT PUBLICATIONS

To commemorate their centenary the Department of Geological Sciences at the University of Birmingham have published a short history written by Isles Strachan.

STRACHAN, I. 1981. A short history of the Department of Geological Sciences 1881-1981. 8pp. and 4 plates. Published by the University of Birmingham.

GEOLOGICAL CURATORS GROUP

(affiliated to the Geological Society of London)

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Geoff Tresise.

THE GEOLOGICAL CURATORS GROUP

The purpose of the Group is 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