

GEOLOGICAL CURATOR



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GEOLOGICAL CURATORS' GROUP

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

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

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EDITORIAL

The past must have a future.

This issue, the first of volume 7, contains some of the papers presented at the one-day meeting *Has the Past a Future?* held at the Geological Society of London on 24th September 1998. The meeting was organised by John Thackray for the History of Geology Group, the Geological Curators' Group, and the GeoConservation Commission. Altogether eight papers were presented of which five appear herein. In addition Chris Green (Royal Holloway, Egham) spoke on the work of the Curry Fund of the Geologists' Association, John Martin (Leicestershire Museums) recalled the considerable work and stages involved in collecting, conserving and exhibiting the Rutland Dinosaur, while John Thackray (Natural History Museum, London) discussed the longevity of modern electronic archives.

The papers published here are interestingly diverse. The important report *State and Status of geology in UK museums*, published by the Geological Society in 1981 and the developments implemented in museums since that time are discussed by its author Philip Doughty. With reorganisation or closure of geological departments in the United Kingdom the outlook for some collections was not bright. The University of Newcastle's mineral

collection, its rescue and importance, is discussed by Steve McLean and is a lesson in what should be done with 'orphan collections'. The role of English Nature in site conservation and its importance in the history of geology is discussed by Colin Prosser and Andy King, while David Oldroyd retraces the footsteps of the Cambridge geologist J. Marr in the Lakes, in an attempt to survey the accuracy of his fieldwork and to gauge the present nature of critical exposures. Michael Collie describes and comments on some archives in northern Scotland, which contain, or once contained, important documentation for historians of geologists.

This thematic set draws together diverse examples where it is clear that the recognition of our past geological heritage is valuable in that it allows for greater understanding of past and present geological problems by latter-day geologists. Such sources, be they archives, geological collections or geological landscapes and sites must be preserved. The past must have a future.

Patrick Wyse Jackson
23rd March 1999

MUSEUMS THEN AND NOW: COLLECTION DEVELOPMENTS IN MUSEUM GEOLOGY SINCE 1981.

by Philip S. Doughty



Doughty, P.S. 1999. Museums then and now: collection developments in museum geology since 1981. *The Geological Curator* 7(1): 3-10.

The State and Status of Geology in UK Museums report of the Geological Curators' Group was published in 1981 and revealed collections on a vastly wider scale than had previously been suspected and a situation of mismanagement and neglect of scandalous proportions. The report sprang from a particular set of circumstances and its recommendations became elevated almost to the status of an agenda for the future work of GCG. This historical re-examination of the report shows that what was perceived initially as a disappointing response was in fact a prelude to a substantial and sustained curatorial campaign to address all the major issues that it raised. The creation of collection location lists and bibliographies and the documentation of procedures, standards and practices that resulted were nothing less than the professionalisation of geological museology. Since GCG was the first of the new wave of specialist groups in the graduate era its work proved enormously influential in general. The phase of activity associated with the report is now complete and the Group needs to redefine its aims and objectives for the new millennium.

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1981 has proved to be a pivotal year in the development of geological curation because the report on geological collections conducted on behalf of the Geological Curators' Group was published then. *The State and Status of Geology in UK Museums* (Doughty 1981) was the first attempt to locate, quantify and investigate in detail and depth the geological collections in the museums of the UK. It was conducted to meet a fundamental need for empirical information as a prelude to further professional development. The report was very much a product of a particular set of circumstances and without some historic context its impact cannot be fully understood since it was the impact that drove most of the subsequent events.

Beginnings

The 1960s saw the first mass entry of graduates into the museums of the UK. The regional distribution of museums and the financial restrictions constraining the travel of junior staff were such that these new graduate curators found themselves isolated both physically and intellectually with almost no avenues of communication open to them. For junior museum staff there was only one obvious forum, the Museum Assistants' Group, which held a few meetings around the country but whose main event was an annual weekend meeting, ultimately to become the Group's 'study weekend'. It was at these meetings that small groups of like-minded

curators met to share their experience and to contribute to a programme constantly preoccupied with the general museum issues of the day. In this setting a few geologists coincidentally rubbed shoulders socially and were able to share common concerns and anxieties but there was never enough time to develop thinking and plan activity. The Group's general interest membership also precluded themed meetings with a specialist focus so the debate remained informal.

The chief anxiety expressed by the scientific curators centred on the condition of the collections that many found in their museums and were gradually becoming aware of in neighbouring institutions. On seeking help and guidance about the curation of the material, they found little or nothing that assisted in any practical or philosophical way and no obvious organisation to consult for advice. There were centres of good practice, usually the national museums with geological collections, and some of the larger provincial museums, but there was no relevant literature and no professional framework to guide struggling curators.

The situation that this generation of curators exposed was general to the museum sector but for want of research was not widely appreciated. Although museum staff claimed to be a profession, in fact none of the standard indicators of professional practice existed in cohesive form. There was no authoritative literature

based on specialist knowledge, indeed, very little specialised knowledge immediately evident; no training institution (although the Museums Association had traditionally provided a diploma course for its non-graduate intake), no tertiary level formal courses, no published work standards and no code of professional ethics. There was, however, a firm tradition of public service and, in the Museums Association, a formal organisation with the potential to form a professional focus, although at that time it was perceived as serving local authority needs and was consequently regarded with a measure of suspicion by the national museums.

To a graduate intake this situation was dispiriting but at the same time it presented a unique opportunity that was seized for geological curators by staff in the Leicester City Museum and Art Gallery. In the spring of 1974 they called a preliminary meeting of a cross-section of geologists working in UK museums to examine the formation of a formal body for geological curators. The composition of the rather apprehensive group that met in Leicester was interesting in that it included, in addition to curators working in local authority museums, representatives from national museums and a smattering of university staff with collection responsibilities or research interests in museum material. The discussion quickly identified shared concerns and a unanimity of purpose and the decision to establish a formal entity, to be called the Geological Curators' Group, was quickly taken. Discussion of affiliation followed with academic or museum relationships being the obvious alternatives. An approach to the Museums Association suggested that they were uneasy with the entire concept of specialist groups within the membership, the reasoning being that it would lead to fragmentation of the "profession". Thereby what in hindsight appears to have been an historic opportunity was missed but in any case the inaugural meeting strongly favoured links with the Geological Society of London. In strong contrast with the Museums Association the Society proved welcoming to, interested in, and supportive of, professional development and eager to promote the diversity of interests within geology.

The formation of the Geological Curators' Group was received with a communal sigh of relief by museum geologists. It brought together a community interested in the philosophy of collecting, researching the literature to see what was available and establishing and promoting standards of practice for day to day work. It also had a developing but uninformed interest in professional conduct eventually to emerge as an input into professional ethics.

There was never a problem identifying what needed to be done by the Group: from the outset it was more a

matter of where to begin - how to prioritise the work that the membership seemed eager to undertake. Among the first aims and objectives of the constitution were:-

- provision of information and advice on all matters relating to geology in museums
- surveillance of collections of geological specimens and information with a view to ensuring their well being
- preparation of a code of practice for the curation and deployment of collections
- initiating and conducting surveys relating to the aims of the Group.

The Committee quickly realised that without knowledge of existing museum practice, standards, or the whereabouts of collections, progress on the first three objectives was impossible. The fourth was therefore invoked.

Survey design

In late 1977 the Recorder of the Group was invited to design and conduct a nation-wide survey to supply empirical data that could be used as a basis for future development. The survey was unprecedented and for this reason presented some basic problems in design, not the least of which was what questions to ask. No statistical information on collections existed at that time and so it was essential to collect a foundation of basic facts. It was also evident from Committee aspirations that information was needed as a basis for policy and strategy. 5 major areas of information were identified.

1. The location and geographic distribution of collections.
2. The sizes of collections and their composition.
3. The nature of collection storage and organisation.
4. The quality of information associated with collections.
5. The staffing of museums with geological collections.

At a late stage, largely because Hugh Torrens was demonstrating the clear need for information on the location of individual collections of note (Torrens 1974a, b, c, d, e, f, 1975, 1977, 1979), it was also decided to request information of named collections where it was known. The only useful source available was C.D. Sherborn's *Where is the collection?* (Sherborn 1940) then more than 35 years out of date and never claimed by the author to be complete at the time of writing.

The Recorder decided early in the planning period that the British Museum (Natural History) and the Institute

of Geological Sciences collections had to be treated separately in the final report. To have included them in the general survey would have caused distortion and would not have recognised their special place in national cultural life.

A further problem was that of the method to be used to conduct the survey. The preference was for an in-depth investigation with a full-time research officer making personal inspections of sites and conducting face to face interviews. Using this method the standardisation of entries in the database would have been assured. Since this was the first such survey to be proposed it proved impossible to interest any funding body in supporting it no matter how it was designed.

The only cost-effective alternative was to design a postal questionnaire for widest circulation. This presented another problem because no consolidated list of museums in the UK then existed but consultation of a variety of yearbooks provided a large body of information which was enhanced with personal information from questionnaire recipients and members of the Committee.

A list of over 2000 museums was eventually compiled and, when rationalised on the basis of owning and managing authorities, reduced to 581. Each institution on the rationalised list was sent a questionnaire, followed a few months later, for those not responding, by a reminder with an additional questionnaire. Finally a telephone sweep was made in an attempt to prompt returns from the small core of non-respondents. The outcome was a 98% return obviating the need for complex sampling analysis.

Findings

A large volume of information was derived from the survey and the following selection of findings is given simply to provide context for the discussion of subsequent developments. Almost all findings surprised the Group membership, starting with the sheer scale of collections in the public sphere.

Of the 569 institutions making a return 280 had geological collections of some description, 49% of the entire survey list. No one had previously suspected that half the museum authorities in the UK owned geological collections.

The percentages expressed in the following findings are of those museums with collections i.e. of the 280.

- A third of the collections were considered large by the standards set i.e. 5,000 or more specimens.
- Excluding the national museums and the Institute of Geological Sciences, it was conservatively

estimated that at least 3 million geological specimens were housed in UK museums.

- 53% of the museums had collections of significance by which it was meant that they included type, figured, cited or regionally important specimens or collections.
- 90% of collections consisted of rocks, fossils and minerals.
- 50% had good local rock collections.
- 50% had good local fossil collections.
- Only 33% had good local mineral collections.
- 22% housed fossil type material but of these 64 museums only 35 had geologically qualified staff.
- Only 50% had scientifically useful original information on the collections.
- Specimen labels were by far the commonest source of original information.
- 15% of museums had no official documentation of any kind (including some with large and important collections).
- The best documentation was always associated with museums employing qualified staff.
- Modern data standards (a national geological standard was agreed with the Museum Documentation Association in 1974) barely impinged on geological documentation.
- Automated systems were virtually unknown in geological documentation and this was especially true of large collections.
- Storage systems caused considerable concern.
- 20% used drawered cabinets.
- 50% used cardboard boxes for some storage.
- 14% used cardboard boxes for all storage.
- 20% had a proportion of their collections in packing cases.
- 50% of collections were in poor condition and at risk.
- 33% had collections and data in active decay or deterioration.
- 50% of collections were organised according to some system.
- 30% had no organisation of any kind and this group included some large and important collections.
- There were no agreed standard classifications in use.

- 16% of museums employed qualified geological staff and only 17% of the remainder had any curatorial arrangement leaving 66% with no form of curatorial cover.
- Fewer than half the university collections had curators (and of those that did the curatorship was usually titular and appended to some other responsibility).
- 60% of museums admitted that they needed help.

The situation in the British Museum (Natural History) (BMNH) [now the Natural History Museum] and in the Institute of Geological Sciences (IGS) was generally better in the sense that storage standards were higher permitting physical access and there was expert geological cover. Documentation to modern standards was, however, rudimentary and neither had a comprehensive register of type material. Since each institution housed in excess of 10 million specimens this represented a major problem and challenge because intellectual access was rudimentary.

The IGS collections presented additional problems. They were dispersed through a series of regional stores and because they have always been regarded as the working collections of the field surveyors they were organised for staff use which rendered them less accessible to others. The problem here is that the IGS (now the British Geological Survey) collections are the seminal collections of UK geology (the BMNH is not overwhelmingly strong in UK material).

The report

Because the scale of holdings uncovered had never previously been suspected by the geological community working in museums, the volume of neglect and mismanagement that emerged seemed overwhelming. The situation revealed was a national disgrace to individual museums, their owning authorities, the Museums Association and its training regime and the Standing Commission on Museums and Galleries. It was clearly a damning indictment of Government policy (actually a policy vacuum) in the field of material culture. There was no easy way to describe the findings within the bounds of temperate language and the political implications were inescapable. It was obvious that a robust presentation of the findings was likely to create most impact and the facts justified such an approach. These factors determined the style of presentation.

The report appeared in the early weeks of 1981 and was published by the Geological Society at no cost to the Group and in sufficient numbers to meet all foreseen needs.

Copies were distributed to the identified audiences which were: the participating museums, other museum professionals, the institutions of museums including the Museums Association, and the Standing Commission on Museums and Galleries; the scientific press, the popular press, the Royal Society and a limited number to interested politicians and key civil servants.

At the outset of the project each museum with collections, when approached, was given an undertaking that it would not be identified by name in the final report, and a copy of the report would be presented so that it could assess its position in relation to the national picture. This guarantee of anonymity was fundamental to participation and the exceptional level of responses and their frankness was a reflection of that assurance.

The report stimulated much more reaction than was expected and there was unanticipated interest shown by the national press, including a full page article in the *Guardian*. The Museums Association was sufficiently roused by the findings to realise that the implications were inescapable. To their credit, they offered a prime place in the programme of the Annual Conference, that year in London, and well attended, for presentation of the findings and a preliminary examination of the issues. A direct consequence of this address was the formation by the Association of its Working Party on Natural Sciences Collections first under the chairmanship of Janet Chamberlain (to 1983) and then Fred Dunning. Expectations of sustained interest were, however, low despite the excitement generated in 1981. There was no strong current of activity immediately evident to address the recommendations of the report, and although it was never likely that government would legislate to safeguard collections it was hoped that other recommendations might attract interest. But, in addition to suggested legislation, the report carried a number of other recommendations including

- The establishing of minimum standards of curatorial care, including environment, storage, organisation, documentation, conservation and staffing.
- A project to establish in useful detail the collections content of all museums with geological material.
- The injection of a dose of professional realism into policy and planning.
- The establishing of posts, or the creation of appropriate professional arrangements, in the case of those museums with significant geological collections and little or no professional cover.
- Museums Area Councils should identify and address the problems in their regions making such additions to their staff as were needed to provide professional support.

- That GCG should assist museums prepared to make long term commitments to their geology collections.
- The preparation of simple guidance to assist non-specialist curators in the management of their collections, to include advice on classification and arrangement.

Reactions

Two things happened immediately. The museum authorities received a covering letter with their copies of the report indicating clearly whether or not they were achieving a basic standard of curatorial support for their geological collections. With few exceptions, those museums failing in this respect acknowledged that much more work needed to be done.

The second was a request from the then Director of the Area Museum Service for the South East of England (AMSSEE), Crispin Paine, to discuss in practical terms what the Area Museum Services, and AMSSEE in particular, could do to begin the rehabilitation process. The discussion ranged over the relative ignorance of the observable condition of the larger neglected collections and the need for that kind of information to be gathered as a starting point for prioritised action; how, with limited funds available, could the many museums be serviced; agreement on a set of basic standards to apply; and possible sources of sponsorship for the work. In that meeting the concept of the peripatetic curator was born and later applied, originally in AMSSEE, but afterwards in the South West, and in the East and West Midlands. A number of freelance advisers ultimately emerged in the wake.

That appeared to be the entire outcome of the project. It is only in retrospect that the full influence and impact of the work leading to the report, and of the report itself, can be appreciated. They created a climate of opinion among geological curators and museum authorities owning geological material and spawned a number of long term projects that established geological practice in museums on a professional basis for the first time, simultaneously creating a new museological movement relevant to all other museum disciplines. There were a number of key components.

1. The strong push for collections information and the development of an early literature (Torrens *op. cit.*) presented the first major project to GCG. In 1975 the Biology Curators Group (BCG) was formed and immediately offered observer status on the GCG Committee. The enthusiasm for the location of named collections was quickly transmitted and in some regions of the UK putative collections information movements were developing among natural sciences curators. The first formalised

expression of this was the North West Collection Research Unit formed in 1977 (Pettitt and Hancock 1981) which published its first provisional register, a substantial compilation, in 1979. *State and Status* included an appendix of over 800 named geological collections declared during the survey. A national movement, the Federation for Natural Sciences Collections Research, was formed in 1981 and, as a result of its work, basic information on over 95% of the natural sciences contents of UK museums is now known (Bateman *et al.* 1993, Davis *et al.* 1986, Hancock *et al.* 1981, Hartley *et al.* 1987, Stace *et al.* 1988, Walley 1985). This unrivalled record is unique to the natural sciences in the UK and comprehensively addresses the objective requiring the location of collections, a remarkable achievement for an entirely voluntary movement.

2. A specialist extension of this work was the work of another member of the Group. Ron Cleevely's *World Palaeontology Collections* was published in 1983 with the support of the BMNH. The international contacts enjoyed by the Museum allowed the compilation of this large and ambitious compendium which by its very nature is bound to be less complete than the national equivalents but is still the only recent source available locating the collections of the international giants of palaeontology. It is a project worthy of revision.
3. A survey of the literature relating to geology in museums was undertaken by Tom Sharpe with the support of the National Museum of Wales and published as *Geology in Museums* (Sharpe 1983). The background to the work is fully explained in Howard Brunton's Foreword and was firmly linked to the Survey. *Geology in Museums* was a compilation of over 1000 references and for the first time brought together the literature on which geological curation in museums was based. It remains a valuable source for pre-1983 publications and is another work worthy of a 2nd edition, although this now would be a substantial undertaking.
4. Preparation for the *Manual of Curatorship*, a concept of the Museums Association, commenced in 1979 although it did not appear in print until 1984 (Thompson 1984). The *Manual* was originally intended to offer practical curatorial guidance across the entire spectrum of museum practice and involved around 60 specialist contributors. In the event it was a collection of a little over 60 essays, about half of which addressed collection management issues, and then in a very inconsistent way. Because the *State and Status* report (Doughty 1981) and Sharpe's compilation were completed and the direction of FENSCORE was well established the geological

contribution (Doughty 1984) was one of the fullest and best informed. The *Manual* fell well short of its initial intention of offering best bench practice to museum curators for the simple reason that basic professional standards of practice, the essential underpinning for such a project, did not exist. The 2nd edition of the *Manual* (Thompson 1992) suffered from the same defect although there had been significant developments affecting geological practice in the interim requiring useful revision (Doughty 1992).

5. In 1985 *Guidelines for the curation of geological materials* (Brunton, Besterman and Cooper 1985) appeared, as the GCG response to the mass of practical issues arising from the *State and Status* report. It represented a massive step forward in the principles, standards and practice of geological curation and was a true manual for routine work. It presented in integrated format the working experience of 18 curators and related academics accumulated throughout their careers but given added impetus since the formation of GCG in 1974, and was designed for bench practice. It also included sections on the conservation of geological materials, exposed as wanting in the report, but not investigated in depth. It was without peer in all museum literature and proved visionary, not simply for geology, but for large areas of the museum profession. It set empirical standards based on the research programmes undertaken by GCG over a decade and for that reason it was difficult to imitate in all but the biological sciences where similar intensive work had been running in parallel.
6. *Biological Collections UK* (Williams 1987) was the biological sciences' contribution to the debate. It sprang from the Museums Association's Working Party on Natural Science Collections but with the additional force of the Advisory Board for the Research Councils which already had recognised the taxonomic importance of biological collections. The climate generated by the events of 1981 made the likelihood of a successful application for grant aid more realistic and in the event the Natural Environment Research Council and the Science and Engineering Research Council provided sufficient resources for the employment of a full-time research officer, Bernice Williams, for the duration of the project. The investigation again took the form of a questionnaire survey, this time more wide-ranging and searching, and the results were similarly disturbing, revealing in a mass of detail that the malaise affecting collections was general in the natural sciences. The scale of the report, at 588 pages, and its complexity, robbed it of much of the impact of the geology report, and the commercial publication package decided by the Museums Association, fixing a retail price of £70, severely curtailed its readership. Its significance in geological terms was the effective sinking of a joint arrangement with the biologists to circularise all UK Members of Parliament with copies of both reports as a prelude to direct political debate. In retrospect the pricing policy of the Association was one of the poorest decisions in the entire process.
7. The provision of suitable geological guidance to interested curators lacking a geological background was superbly met by Knell and Taylor's *Geology in the Local Museum* (1989). This simple, attractive guide on how to curate collections and how to finance the work was witty, charming, replete with inspissate wisdom and carefully crafted to meet the needs of the intended audience. It was a model of its kind and another product that broke new professional ground, thereby attracting widespread interest.
8. The lack of broadly accepted standards of museum practice was a barrier to all professional development and a limitation recognised by GCG at its inception and addressed by *Guidelines for the curation of geological materials* (Brunton, Besterman and Cooper 1985). It was the Museums and Galleries Commission that finally repaired the omission for museums as a whole with the publication of the first of the *Standards in the Museum Care of* series in 1992. The Geological Collections volume, the third in the series, appeared in 1993 and required no significantly new research - in fact presenting less detail than Brunton's *Guidelines*. The advantage of the series was that the entire museum movement could progress on a broad front from the same foundation.
9. One of the original objectives of GCG laid out in its first constitution was the surveillance of collections and establishing the whereabouts of collections was one of the many intentions of the *State and Status* report. The publicising of collections to a wider professional audience was an outstanding problem admirably solved by John Nudds in his *Directory of British Geological Museums* (1994). In pocket-book format the *Directory* presents an attractively illustrated formulaic account of around 90 museums and their geological contents and, despite the title, also includes the principal Irish collections. All the major collections in the British Isles have entries and key information.
10. An important recent contribution to the literature is Parkes and Wyse Jackson's report of the results of

their own state and status of collections in the Republic of Ireland (Parkes and Wyse Jackson 1998). Of the 73 institutions circularised, 31 had collections and each was allocated to one of three categories: education or institutional geological departments; county and local museums; all others including private collections. All the major collections fall into the first category and three of these are fairly fully described in Nudds (1994). A general lack of geological curatorial expertise is a major finding, resulting in a measure of confusion between archaeology and geology in centres lacking geological staff. The long history shared with the UK and the free exchange of personnel within the British Isles to the present time makes this survey especially important and a collection research survey equivalent to those of the British regions is an obvious future project.

From 1974 onwards the *Newsletter of the Geological Curators' Group*, later to become *The Geological Curator*, was publishing on a wide range of topics of relevance to the rapidly expanding professional horizons of the Group and the greatest general contribution to the literature has been through this medium. This journal has trailblazed accounts of individual collectors and their collections and still sets the pace in this key area of museology.

Interestingly, every one of the recommendations of the *State and Status* report, outside legislative protection for collections, has been addressed in the intervening years. The desire to see immediate reaction to the report and its findings and the frustrating feeling that it had achieved little to improve the situation was, on reflection, naive. The nature and scale of the work required was such that it was bound to be medium to long term in its demands and would have to be performed by curators of some experience and maturity of judgement. It is to the credit of the museum geological community that the tenacity required to carry the tasks through has been exhibited in full measure. The professionalisation of geological practice in UK museums, for that was the magnitude of the task, has been achieved largely through the remarkable commonality of purpose of the founding group that formed GCG and it has now attained a stage of development that remains the envy of most other specialist groups.

The particular body of knowledge that constitutes geological curation has been defined and applied, the standards on which it is based have been devised and articulated, professional structures and procedures are agreed and operational and the literature is massively expanded and continues to grow healthily. For most professions that is simply the foundation. It is now

worth recording that the phase of activity that was, to greater or lesser extent, driven by the *State and Status* report and its recommendations is drawing to a close.

What next?

Eyes must again return to the professional horizon to identify the new landmarks by which to navigate the next set of objectives. Raising the awareness of collections to its present prominence, while vital for a wide field of research, was never a goal in itself. Knowledge of the natural sciences collections of the UK is unparalleled in world museology and the major challenge now is how to deploy it to bring this massive and superb resource into general use. Ways of achieving that objective, particularly in the mass communication and information age, are legion and the Group needs to step back and define its next stage of strategic development, and the research that will support it, with care and clarity. Access in all its definitions is now a political objective with major force and the material culture of geology and biology is uniquely placed to deliver it.

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RESCUING AN ORPHAN MINERAL COLLECTION: THE CASE OF THE UNIVERSITY OF NEWCASTLE MINERAL COLLECTION AT THE HANCOCK MUSEUM

by Steven G. McLean



McLean, S.G. 1999. Rescuing an orphan mineral collection: the case of the University of Newcastle mineral collection at the Hancock Museum. *The Geological Curator* 7(1): 11-16.

In late 1995 the mineral collection from the University of Newcastle Department of Geology was transferred to the Hancock Museum. For five years the collection had been stored in an unsuitable warehouse with a high relative humidity. The specimens, together with the original cabinets, were moved and carefully rehabilitated. The cabinets were reconstructed, while the specimens were cleaned, recatalogued and rehoused by staff of the Hancock assisted by members of the local branch of the Russell Society. The collection numbers nearly 7500 specimens some of which were collected by Arthur Russell and C.T. Trechmann, and represent material from the North Pennines in particular but also British and foreign localities.

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Introduction

In December 1995, the Hancock Museum acquired the mineral collection of the now defunct geology department of the University of Newcastle upon Tyne. Since the closure of the geology department in around 1990, this collection, which comprises 8000 specimens, had been moved on more than one occasion to different buildings within the University campus prior to its relocation to the Hancock. Investigations into the conditions of these locations revealed entirely inappropriate environments resulting in the accelerated decay of susceptible mineral specimens, primarily iron sulphides. Through negotiation with the University, the collection was transferred to the Hancock and underwent extensive re-organisation and cataloguing, re-storage, cleaning and remedial conservation. This paper describes the work undertaken to ensure the long-term survival of this important and hitherto inaccessible collection.

Background: The Hancock Museum and the University of Newcastle upon Tyne.

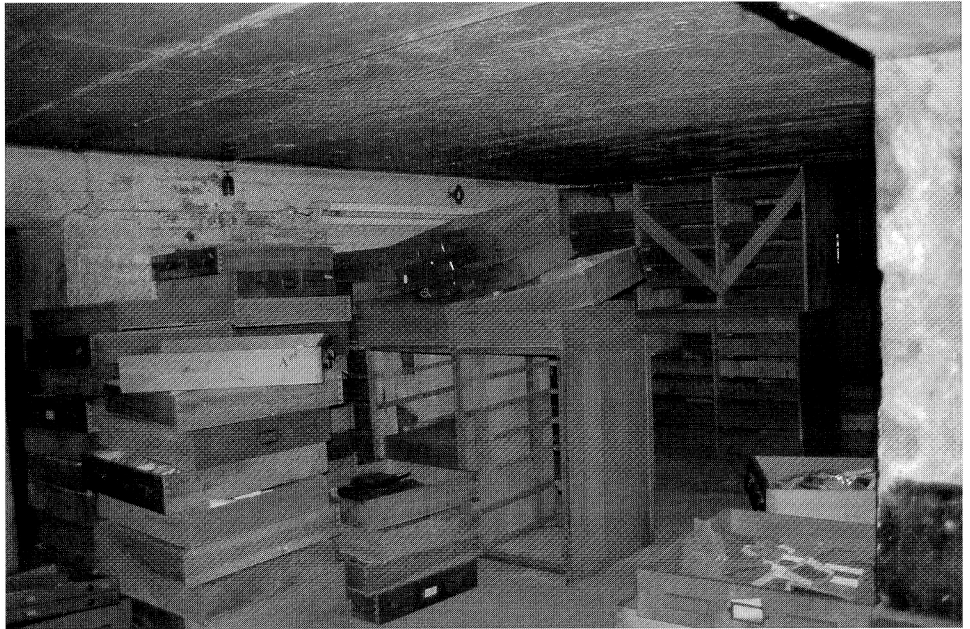
The Hancock Museum was opened in 1884 as a purpose built museum to house the collections of the Natural History Society of Northumberland, Durham and Newcastle upon Tyne (now the Natural History Society of Northumbria (NHS)). In 1959, the NHS entered into an agreement with the University of Newcastle upon

Tyne whereby the University leased the Museum from the NHS for 99 years. Until 1992, the University provided its own staff to manage the Museum and its extensive collections of natural history, geology and ethnography. The NHS is the legal owner of the collections and the building. In 1992, the University entered into a contract with Tyne and Wear Museums to manage the Hancock, on its behalf, through a service level agreement. Essentially the Museum is now managed by Tyne and Wear Museums who provide their own staff. An annual revenue grant is provided by the University, as well as some central support services (eg. building maintenance).

The University Mineral Collection

After closure of the geology department, the mineral collection remained on-site at the University. Given the fact that specialist staff were no longer available to care for the collection, it went into decline for several years, being moved from site to site as space was requisitioned for other University functions. For many years the collection, which comprises both teaching sets and reference material (the latter making up the bulk of the collection), was housed in a concrete bridge building, over the Great North Road, that linked the main University campus to the University library. Subsequently the collection found itself located in the basement room of one of the University warehouses.

Figure 1. Part of the Newcastle University Mineral Collection as it was stored in the basement of a University warehouse in 1995.



In 1994, staff at the Hancock began investigating the whereabouts of the collection. Having located it, the storage environment was monitored using thermohygrographs. On some occasions relative humidity reached the remarkably high levels of 90%+ and it was clear that there was considerable and progressive decay of pyritized specimens. Even in the relatively short space of time the collection had been 'orphaned' from the geology department (no more than five years) many specimens had decayed to such an extent that they had to be disposed of. The collection was still housed in its original wooden drawers but in order to re-locate it the drawers had been removed from their cabinets. This resulted in considerable disorganisation and dust contamination.

Working with technicians from the University department of Fossil Fuels and Environmental Geochemistry, who were also concerned about the welfare of the collection, staff at the Hancock approached the University to offer to house the collection within the Museum, provided that funding could be found to curate it. Given the fact that the collection would clearly not survive, this proposed relocation was considered urgent.

Transferring the collection

The University was unable to transfer the collection permanently so a formal agreement was reached whereby the University transferred the collection to the Hancock on long-term loan tied into the present lease



Figure 2. The collection after re-assembly and re-organisation at the Hancock Museum.

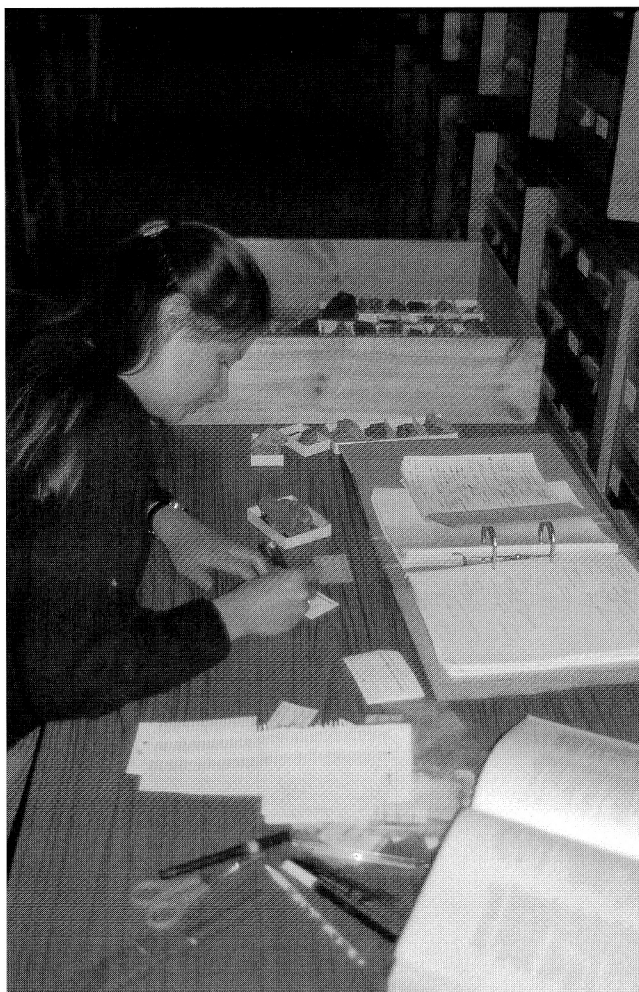


Figure 3. A member of the cataloguing team at work transcribing labels and adding numbers to specimens.

agreement with the NHS. The collection will now remain at the Hancock until 2058 at which time a subsequent agreement will be re-negotiated dependent on the renewal or otherwise of the lease agreement. Through the area museum council (North East Museums (NEMS)), an application was made to the Higher Education Funding Council for England (HEFCE) in order to employ staff on short-term contract to undertake the re-organisation and cataloguing of the collection. The application was successful and a total of £6000 was awarded. This enabled the Museum to employ three cataloguers to undertake this curatorial function. The total amount of time this allowed was the equivalent of a single person working on the project for 7 months.

Re-organisation and cataloguing

The collection was first registered with the Museums Documentation Association (MDA) so that a unique prefix could be applied to the catalogue numbers. This is quite unusual since MDA prefixes are normally given to museums and not individual collections. In this case the prefix NEWUM (Newcastle University Minerals) was applied. This procedure was necessary because the Hancock's MDA prefix (NEWHM) could

not be used as the mineral collection still belonged to the University and not the NHS. One of the conditions of transfer was that the University collection could be distinguished from the Hancock collections (especially the Hancock's own mineral collections). Under the supervision of staff at the Hancock, the collection was moved, drawer by drawer, to the Museum, where it was set out in an empty gallery prior to the reconstruction of the original cabinets. The collection was originally organised chemically and so it was agreed that this system would be continued using *Hey's Mineral Index* (Clark 1993). Since the Hancock's own mineral collections are organised in this way, this solution seemed the most appropriate. Once the collection was organised and the drawers returned to their cabinets work on actual cataloguing commenced.

At this point volunteers from the local branch of the Russell Society (one of the UK's leading mineralogical societies) offered to help with the project by providing their considerable expertise and mineralogical knowledge. These experts kept ahead of the cataloguers and began the work of re-uniting the mineral labels with their specimens whilst simultaneously adding further information or identifications where known. Since the collection was in a state of disarray, and much of the label information was either missing, or provided very little detail, this work was essential. It should be noted that where information was added (either identifications or probable localities) the authority and date of this new information was duly noted in the catalogue entry. This ensured that new data was not confused with the original label data. Such an exercise has considerably improved the quality of data now held with the collection.

Given the work done by the volunteers, the cataloguers were able to concentrate entirely on adding numbers to the specimens, transcribing the label information onto new labels (whilst retaining all existing labels and other notes) and entering the data on computer (using MODES Plus). This allowed 7479 specimens to be catalogued in seven months. Drawer locations were also added to the labels and catalogue entries thus allowing the easy location of individual specimens in the future.

In some cases material was removed from the collection for disposal (in consultation with curatorial staff). This was primarily pyritized material that had decayed beyond repair. In all cases data relating to these specimens was retained. Some material was considered of insufficient quality to warrant cataloguing. In most cases this consisted of inferior and poor quality duplicate material. These specimens were, however, retained and kept in a separate part of the collection and now provide a resource for chemical analysis when such material is requested by staff at the University.



Figure 4. Members of the Northern Branch of the Russell Society cleaning the collection.

Cleaning the collection

After completion of the re-organisation and cataloguing, volunteers from the Northern Branch of the Russell Society continued to work on the collection, their primary goal being to clean the accumulated grime (of which there was a considerable amount) from the specimens and to transfer them into new acid-free storage trays. Members from the society set up a rigorous 'cleaning chain' to systematically work through the collection. Their method was as follows:

The Ten Point Cleaning Plan

1. Removal of specimens from drawers.
2. Cleaning of drawers to remove build up of dust.
3. Cleaning of existing good quality trays or replacement with new trays.
4. Assessment of the physical and chemical nature of the specimens.
5. Washing where possible.
6. Rinsing with distilled (de-ionised) water to remove any added pollutants.



Figure 5. Trevor Bridges of the Russell Society reviewing the existing documentation found with a specimen of plancheite.

7. Transfer to acid-free absorbent tissue to soak up excess water and then allowing specimens to dry in ambient air.
8. Returning specimens to card trays with all associated data.
9. Returning trays to drawers and then units.
10. Covering the drawers with a thin 2mm plastazote dust sheet. (This was only possible if the material was not too fragile).

Throughout this process perhaps the most crucial stage was the assessment of the physical and chemical nature of the specimens. It is generally agreed that cleaning implies "the removal of foreign matter from mineral assemblages, i.e. removal of dust, dirt or extraneous clay - not the removal of associated minerals, including the products of oxidation, from the surface of the principal mineral(s)" (King 1992). It was at this point that a decision was made as to whether the specimen could be washed or not. Material that was too fragile or would react adversely to water immersion was either dusted using dry compressed air or left entirely untreated.

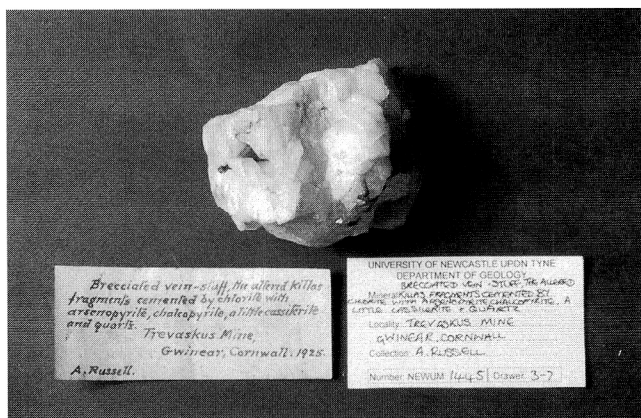


Figure 6. A specimen collected by Sir Arthur Russell and labelled as "Brecciated vein-stuff the altered killas fragments cemented by chlorite with arsenopyrite, chalcopyrite, a little cassiterite and quartz. Trevascus Mine, Gwinear, Cornwall, 1925. A. Russell". There are four Russell specimens in the collection. NEWUM:1445



Figure 7. Leadhillite (with linarite and cerussite). Example of a specimen with very little associated documentation but which now includes the following as provided by T. Bridges of the Russell Society: "The colourless plates on this specimen analyse chemically as leadhillite. The blue mineral is linarite. Labelled azurite with cerussite and chalcopyrite, the specimen was in a drawer with a large number of other "azurites" which were really linarite, mostly labelled from Cumberland. They are all typically Caldbeck Fells material, most probably from Redgill Mine. The specimen contains no chalcopyrite so the label may not be the original for the specimen. This specimen is best labelled "possibly from Redgill Mine, Caldbeck Fells"". NEWUM:3959. Specimen is 6cm in length.

The list of water sensitive minerals provided by King (1992) provided a good starting point for the identification of such material. Thus the preservation of the existing paragenesis of each specimen was paramount.

At the time of publication approximately 80% of the collection has been cleaned (or assessed). Members of the Russell Society continue to work on the collection and it is hoped that the cleaning process will be completed later this year. Work has already begun on the remedial conservation of some of the pyrite specimens that were saved, using dry ammonia gas. All conservation work undertaken on specimens is being

recorded, and in general, as work progresses, more and more information is being added to the collection.

The importance of the collection

Throughout the duration of the project it was always the intention to identify the significance of the collection and the quality of the specimens it contains. This is important not only for historical and scientific reasons but also for the potential display material which may be yielded. It has transpired that the collection contains a significant quantity of rare, high quality and historically important material. For example, a significant proportion of the collection originates from Wallington Hall (ex-Trevelyan collection), Armstrong and Kings Colleges (Newcastle University) and from various well known geologists such as C.T. Trechmann and Sir Arthur Russell. The collection is particularly strong in North Pennine material but also includes specimens from other well known British localities as well as foreign locations. Of particular interest was the discovery of a 'Lady's Slipper'. This is a fine example of an epimorph of siderite after baryte, or possibly anhydrite, and there is just enough of the original label left to positively identify the locality as Virtuous Lady Mine, Buckland Monachorum, Devon. In the future it is hoped that a catalogue will be published in order to make the collection more accessible to researchers.

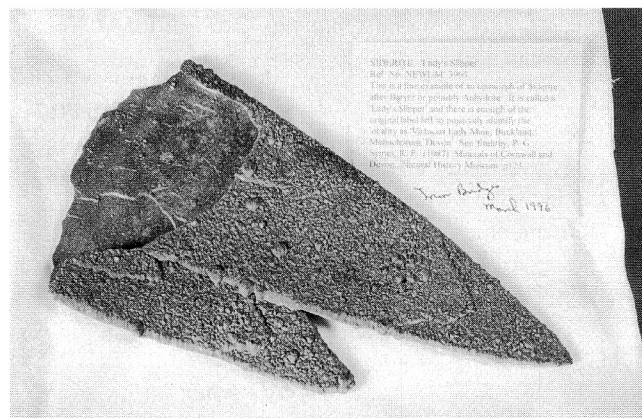


Figure 8. 'Lady's Slipper' from Virtuous Lady Mine, Buckland Monachorum, Devon. NEWUM:3964. Specimen is 19cm in length.

Figure 9. The current mineral displays within the new Earthworks gallery at the Hancock Museum. A significant number of specimens on display are from the University Mineral Collection.



Conclusions

Given the precarious state of the University mineral collection prior to its installation at the Hancock Museum, the urgency and ultimate success of this project cannot be understated. Even so, a considerable number of specimens or indeed their associated documentation have been lost. An original catalogue of the collection was never located and it is only thanks to the careful work of members of the Russell Society that documentation has been re-united with the specimens and, where appropriate, augmented. The initial deterioration of the collection was a consequence of removing it from the care of trained specialists because a strategic decision was made to close down a particular department within the University. As a result, the astonishing speed that a collection of this nature can deteriorate has been all too evident. Consultation is the key to eliminating similar situations at other institutions in the future.

Nevertheless, the Newcastle University mineral collection is an irreplaceable mineralogical resource with a considerably safer future. Specimens that lay forgotten in a dark basement room are now more accessible than they have probably ever been before, and members of the public can enjoy some of the more spectacular examples on permanent display at the Hancock. The success with which amateur specialists were involved with the project has only served to

strengthen the co-operative links between the Museum and this community, an advantageous situation with which, I am sure, many others will identify.

Acknowledgements

This project would not have been possible without the considerable help and support of the following organisations and individuals: University of Newcastle upon Tyne, North East Museums, Higher Education Funding Council for England, Darren Hudson, Louise Hollingsworth, Sarah Studd, Rob Hunter and Ian Harrison. My sincere thanks go to members of the Russell Society (Northern Branch) for their exceptional help and commitment to the project. They are Trevor Bridges, Shelagh Bridges, Alan Pringle, Helen Wilkinson, Malcolm Woodward, and Nick Carruth (South West Branch).

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EVIDENCE THAT DISAPPEARS: JOHN MARR *ET AL.* AND LAKELAND GEOLOGICAL SITES

by David Oldroyd



Oldroyd, D.R. 1999. Evidence that disappears: John Marr *et al.* and Lakeland geological sites. *The Geological Curator* 7(1): 17-25.

In assembling material for a projected book on the history of geological research in the Lake District, the author has spent considerable time examining sites of historical importance in the National Park and its environs, and has interviewed numerous geologists who have worked, or are working, in the area. He has found that many of the well-known sites are now denuded of fossils, but that conservation has not, in general, assisted his enquiries. 'Conserved' sites (RIGS or SSSI) are sometimes hopelessly overgrown, while unconserved ones, where sheep are active, sometimes have the features that were visible to nineteenth- or early twentieth-century geologists well preserved, even if the fossils are now removed. Several interviewed field geologists stated that their work was not seriously hampered by the activities of amateurs or students, though mention of localities in field-guides often led to their damage. For the purposes of the present paper, attention is chiefly focused on the work of the Cambridge professor, John E. Marr.

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Introduction

Though resident in Australia, I have, since retirement, been working for the last three years on a study of the history of geological work in the Lake District, with a book on that topic in view. Much of my work in Britain has been involved with familiarising myself with the terrain and the geology of the Lakeland region, though I have been there a good many times, on and off, since my childhood. I have also been conducting interviews with geologists who have worked, or are working in, The Lakes (all of whom have been exceedingly helpful and generous with their time). I find it necessary to do fieldwork of this kind, for without it I am unable to make much sense of the published literature; and I hope that some of the many photographs I have taken will eventually find a way into my book.

With this recent background, it was with pleasure that I accepted John Thackray's invitation to participate in the symposium 'Has the Past a Future?', held at the Geological Society on 24 September, 1998.

I have addressed elsewhere the broader theoretical questions of the use of non-written sources in the study of the history of geology and the value of trying to recreate geologists' experiences and their thinking by means of one's own field work, as well as the problems and pitfalls of this kind of work (Oldroyd, in press). Here I confine myself to the specifics of my Lakeland

work, and will consider it from the perspective of problems in conservation. Following my remit, I shall focus chiefly on the work of the Lancastrian Cambridge professor, John Marr (1857-1933), but other geologists will be mentioned too.

'In the shoes' (or boots) of earlier geologists

The general principle of 'placing oneself in the shoes' of others for the purpose of understanding their thinking (a procedure urged by the Oxford archaeologist and philosopher/historian R.G. Collingwood in 1939) might well be followed quite literally for the notable Lakeland geologist, Adam Sedgwick. A pair of his shoes is to be found safely preserved on the piano in the library of Charles Lyell's Scottish mansion, Kinnordy House, where Sedgwick apparently left them on one occasion when visiting Lyell! But that degree of literalness is not the kind of thing that either Collingwood or I would have in mind. Rather, the question I have to address has to do with the extent to which I am able to retrace the footsteps of Marr or others; the extent to which such an exercise is useful; and the extent to which circumstances have changed over the years since Marr, or whoever, were in The Lakes; and hence the extent to which 'Collingwoodian' re-enactments of past experience—the close 'rethinking' of the ideas of early geologists—are possible, given the present circumstances in the field. It may be mentioned that Marr is a promising case

for work of this kind since his complete set of field notebooks is preserved at Cambridge, so one knows where to go; and we have a good record of his personal observations.

Evidence that was never there

I begin with a trivial but interesting example. It has been stated in the literature (Moseley 1990) that there is a *roche moutonnée* (at SD 292987), near one of the tracks to the old mines at Coniston, which has Marr's name carved on it, dated 1887 (Figure 1). Were this carving made by Marr it would give proof that he visited *that* particular spot; and it would be interesting to know that he sometimes carved graffiti when he was in the field. I was told about the signature by Frank Moseley when I called on him in Birmingham in 1996. In his note of 1990 he draws attention to archival evidence, held at Birmingham, showing that Marr was indeed in the Coniston area in the summer of 1887.

Learning that I was to give the talk on Marr on 24 September, Isles Strachan kindly drew my attention to the 1990 article and sent me a photocopy of the signature for my interest. However, I had only recently interviewed Penrith geologist Eric Skipsey, who had told me that there had been a mistake. There are, it seems, several such carvings to be found near the Coniston mines, and on examination they can be seen to say 'J. Mara', not 'J. Marr'. In fact, it is believed that they were carved by an Irish miner who worked in the Coniston copper mines, which is perhaps a more plausible story than that the man who was to become the Cambridge professor spent his time carving graffiti. The case is interesting in that it illustrates the principle of the theory-ladenness of observations—or, as the philosopher N.R. Hanson used to say: 'There is more to seeing than meets the eye-ball'. For, if one looks at the published signature 'sympathetically' it may well look like 'Marr'; but with critical spectacles in place it would seem to read 'Mara'.

More significant is what Marr himself saw and what he depicted on his maps. He did a great deal of work in the Shap Wells area, and looking through his notes I was somewhat puzzled as to why he spent so much time there, when there are so many other interesting places to visit in The Lakes. *This* little mystery was eventually solved when I came to the point in his notes where he recorded that he had proposed that day, July 15 1891, to the daughter of the proprietor of the Shap Wells Hotel. (Marr seemed to be rather distraught and regretful about this step, but to my knowledge his subsequent marriage was a happy one and Mrs Marr made a successful professor's wife at Cambridge.)



Figure 1. 'Signature of Marr', carved on rock near Coniston Mines.

But let us consider Marr's map of the Shap district, produced in association with his Cambridge colleague Alfred Harker (Harker and Marr 1891). A reproduction of the map from this paper is given in Figure 2. It will be seen that a clear exposure of 'Stockdale Rhyolite' is shown running firmly from the now derelict Wasdale Head Farm in a south-westerly direction. I have had the benefit of visiting this area in the company of Jack Soper, who has been engaged in mapping it on contract to the British Geological Survey and so knows it really intimately. We concurred that there was but one small exposure of the 'rhyolite' near the farm. (Some geologists construe the rock as a rheomorphic ignimbrite [Millward and Lawrence 1985], though this interpretation has been queried by Branney [1986]). The rest of the outcrop, as shown on Harker and Marr's map, was conjectural. Geologists have to make such extrapolations all the time, of course, when they produce solid maps; and the rock does indeed outcrop at Yarlside and Stockdale, to the southwest. Nevertheless, it is worthwhile to see the extent to which Harker and Marr were willing to extrapolate from the actual exposures visible to them. In this case, their mapping far exceeded the field observations that they could have made.

What the historian might try to do: Ashgill Quarry

The famous site at Ashgill Quarry near Torver and Coniston was visited many times by Marr, Henry Alleyne Nicholson, and other colleagues, and it was at this quarry and the adjacent beck that a boundary between the Ashgill Shales (now Ashgillian, Ordovician) and the Skelgill Beds (Marr's lower division of the Stockdale Shales: now Llandovery, Silurian) was established (Marr 1915)—though it never became the definitive internationally accepted stratotype for the Ordovician/Silurian boundary, which now resides at Dobs Linn in Scotland (Cocks 1988). For the Ashgill

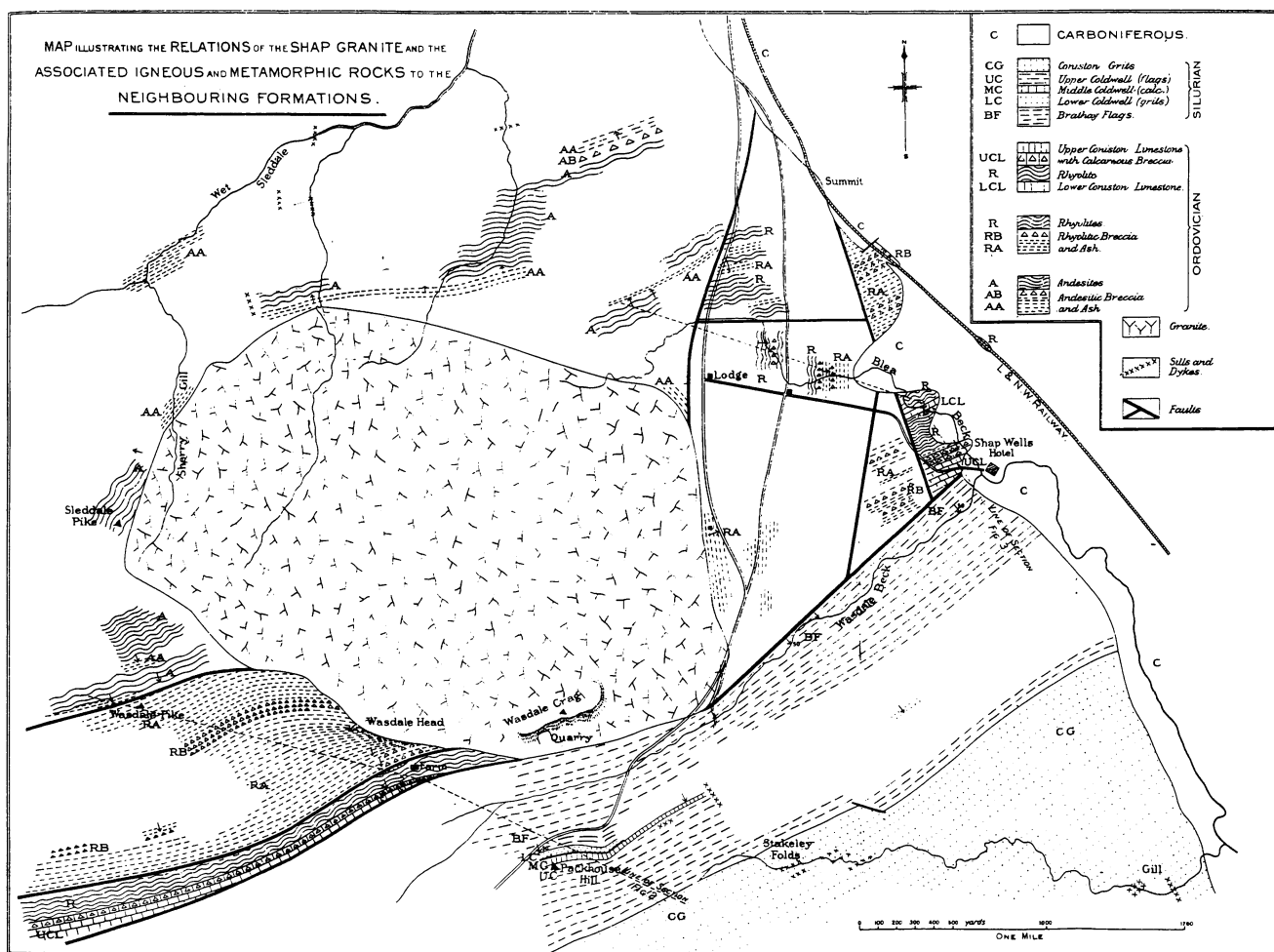


Figure 2. Geological map of the Shap area and Wasdale Head farm, according to Harker and Marr (1891).

area, one can compare the sketch in Marr's field notebook (Figure 3) with his published map (Figure 4), and one's own observations or photographs (Figures 5 and 6). One gets a good 'feel' of the place, and can see where Marr placed his boundary. However, it is impossible to replicate his observations precisely. The area has been picked over by geologists and fossil hunters for generations, and there is little of palaeontological interest left to be found. When I visited the locality in 1996, there was one orthid brachiopod standing proud in the rocks near the waterfall, close to the boundary, probably picked out by a lecturer showing the area to his class. I observed no other fossils. In 1997, this lonely fossil had gone, and no more were on view in 1998. Yet Marr described a rich fauna in the area and was able to determine the change in that fauna from Ordovician to Silurian on the basis of the palaeontological evidence, though the beds seemed to be conformable.

By my visits, then, I was able to get a good appreciation of what the *rocks* looked liked, and particularly the relationship between the bedding and cleavage in the area. I am now in a much better position to comprehend the early papers, for example, understanding what the old geologists meant by 'Graptolitic Mudstones'. These

are the Skelgill Beds, and I now have a sense of what they look like. However, as said, I could not do any palaeontological work at Ashgill—and *should* not, as it is a 'Site of Special Scientific Interest'. However, the actual Ashgill/Skelgill boundary in the quarry is now overgrown and in need of conservation (i.e., clearing). Further, as mentioned, the official Ordovician/Silurian stratotype boundary is now officially situated at Dobs Linn in Scotland (Cocks 1985) (and it was never actually in the Lakes by determination of an IUGS commission). So one would now chiefly go to Ashgill for historical or educational reasons, rather than in the course of stratigraphic research. The fossils that Marr, etc., collected are now in museums; but there must be countless ones that were extracted by amateurs, or students in the course of mapping exercises, and later lost or thrown away, or smashed in the process of extraction.

Is conservation always a 'good thing'? The case of Stockdale and Browgill

In 1996, I paid my first visit to Stockdale and asked the lady at the teashop if I might go up the beck to look at the rocks in the stream-bed in the Stockdale valley, and higher up at Browgill, which localities provided two

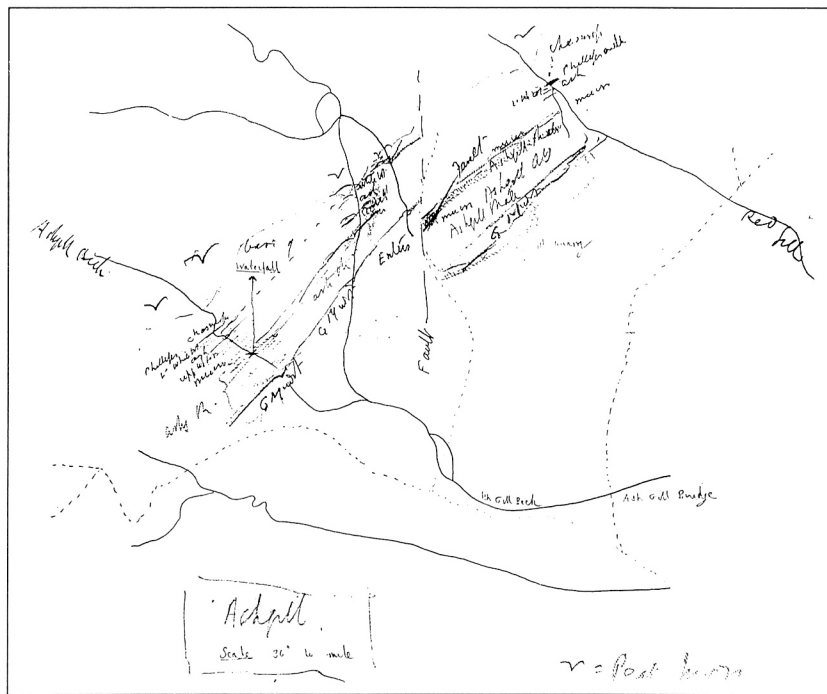


Figure 3. Marr's sketch-map of the area of Ashgill Quarry. In pocket of Notebook LIII, 1914, Sedgwick Museum archives, Cambridge.

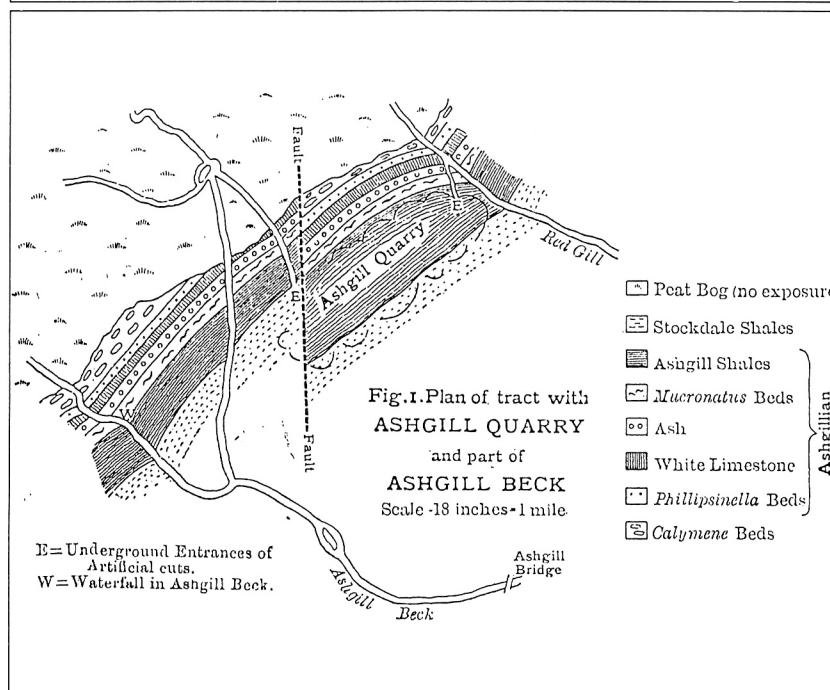


Figure 4. Map of area of Ashgill Quarry, according to Marr (1915, p. 190).



Figure 5. Ashgill Quarry in 1998, looking northwest. Ashgill Slates to left; Skelgill Beds to right. Contact grassed over at rear end of quarry.



Figure 6. Waterfall at Ashgill Beck in 1998, looking northwest. Water flowing down bedding plane in Ashgill Slates; Skelgill Beds with parallel dip, centre-right; Ashgill Quarry and Torver Common in distance.



Figure 7. 'The Rake', Browgill (stream running into Stockdale Beck, Long Sleddale), photographed in 1996.

important sites for Marr's work (Marr and Nicholson 1888). I was informed that the lower site was enclosed as an SSSI, and one could not visit it, but I was allowed to walk up to Browgill (and I also—wickedly—climbed the fence to view the closed-off special site). It appeared, according to what I was told, that in the past a man used to come up from London with a truck and had taken loads of fossils away for sale; but eventually the authorities had put a stop to such goings on. Students had taken away loads of fossils too.

So I went to have a look. The SSSI, now fenced off as said, was totally overgrown. It would have been a tremendously difficult job to find any fossils there (even if any had survived the activities of the earlier collectors); and I could get no sense of the exposures that Marr had described and figured. Up the hill at Browgill, however, where the sheep were still busy, the exposures were excellent, and although there were not many fossils to be found (just a few indeterminate graptolite fragments) one could match one's own observations of the rocks at the well-known site called 'The Rake' (Figure 7) with those made and figured by Marr in the 1880s most satisfactorily (see Figures 8 and 9).

Knowing that I was to speak about the matter at the meeting in September 1998, I revisited the site a few weeks prior, intending to take some more photographs. The only people around were some residents in a holiday cottage, and they kindly gave me the name and telephone number of the actual owner of the property (who did not live there); and I had a chat with him about the situation. The account was rather different from what I had heard two years earlier. The farmer said that he just could not understand why it was necessary for endless successions of students to trample over the same ground and make the same observations, and collect the same fossils (with, I presume, gradually decreasing success). Then one day he saw a programme about the area on an Open University television series—and saw 'his' fossils up on the screen. He reached the conclusion that the whole business was ridiculous: surely geologists had got enough of those fossils by now!

So the farmer determined to put a stop to the matter, fencing off the ground near the prime site in the beck and arranging—with the help of a geologist from Cambridge, whose name he could not recollect—for it to be declared an SSSI. I entirely sympathise with the farmer's motives, but the result is that the Stockdale site is now of little value to geologists or historians of geology, though there are some nice plants there, and probably animals too!

This episode raises the question of what should or should not be done in the way of site conservation. And are good intentions always fulfilled in practice?

Land owners more generally

It is possible to walk over most of the Lake District mountains without impediment, but in the surrounding farming districts difficulties may be encountered by geologists or historians of geology. The Lowther estates near Greystoke are forbidden territory, as is the Rydal Valley running north from Rydal. The latter is most unfortunate for geologists given that (one may discover by trespass) it contains quite magnificent exposures of ignimbrites, some with vertical fiamme.

In fact, in cases of doubt about trespass, a call on the farmer usually seems to be kindly received. At one locality in the Cross Fell inlier, however, I walked down a stream from the hills and did not pass the farm to make the proper courtesy call. Looking for the Pusgill Beds in Swindale Beck, I encountered the following notice: "Much damage has been done by mindless and needless unauthorised hacking away, here and elsewhere. Private Property. Trespassers will be Prosecuted".

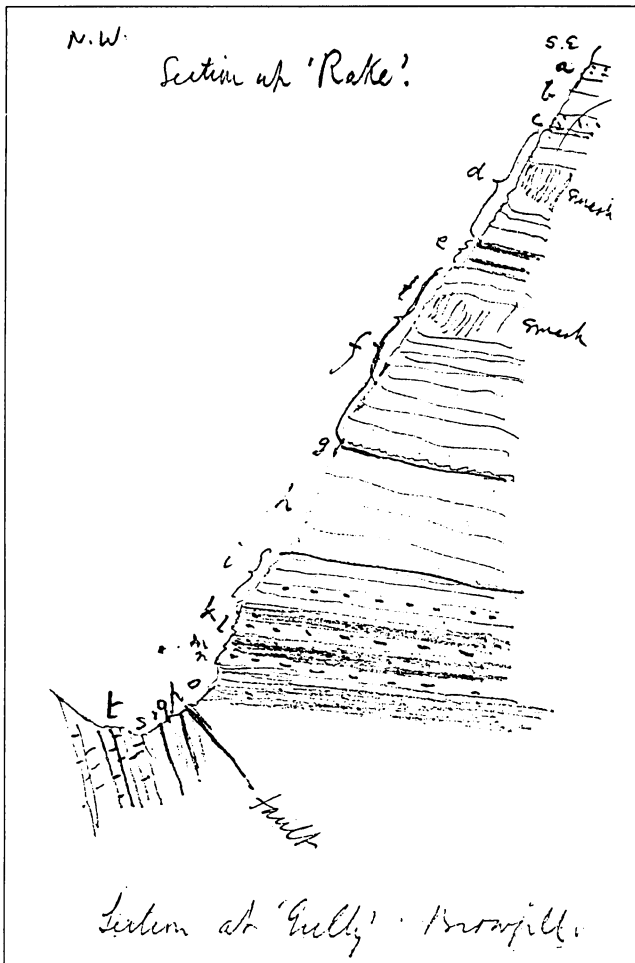


Figure 8. Sketch of section at 'The Rake', Bowgill, by Marr: Field Notebook XVI, Sept. 20, 1886. Sedgwick Museum archives, Cambridge.

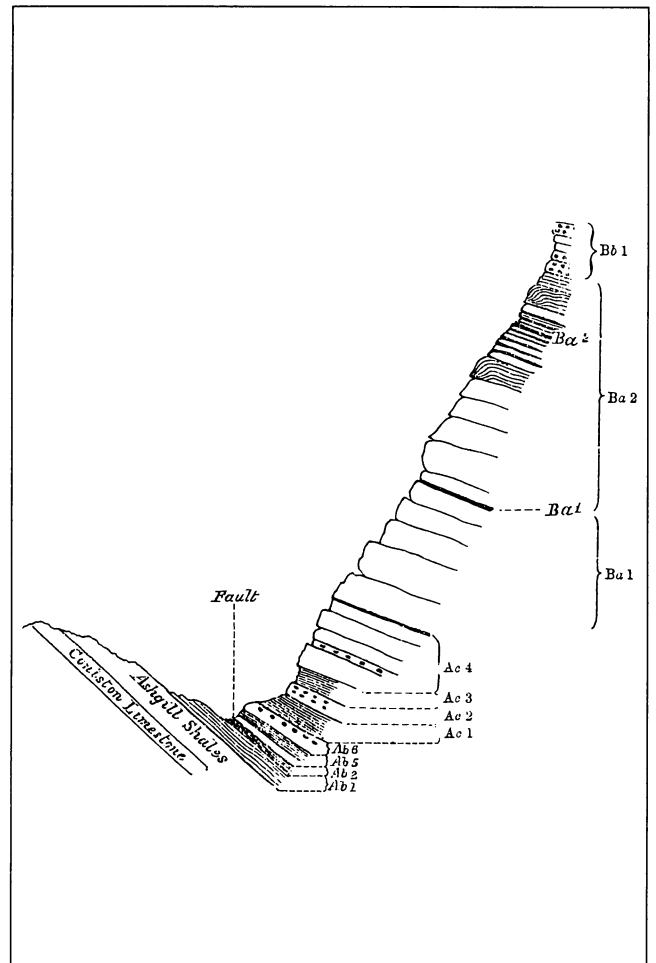


Figure 9. Published version of the section shown in Figure 8. Marr and Nicholson (1888, p. 675).

This did not seem welcoming and so I took a photograph or two and rapidly fled. However, during my hasty departure, I met two students more brazen than me, doing a mapping exercise. They had not, it appeared, obtained permission to be on the property, but had done what they had been sent there to do by their supervisor, and by means of mindful hacking had secured two good trilobites. One wonders. Would the fossils have been there to be found if others had not been frightened off by the farmer's notice? And was it right that *those* two students should have obtained the trilobites, which would now be denied to others? This raises large questions about the kinds of projects that students should do, after so many years of 'hacking' have gone by.

So far as Marr was concerned, he did not do a great deal of work in the Cross Fell Inlier, but he visited Keisley in 1906 and published a paper on his observations there the same year. I should like to record that the farmer at Keisley was perfectly willing to let me wander round his land.

Evidence that disappears through economic activities

One of the things I have been doing in 1998 is looking at the history of ideas about glaciation in the Lake District (Oldroyd in press). An idea that was popular in Britain in the second half of the nineteenth century, before geologists tried to accommodate their observations to the straitjacket of the Penck/Brückner theory (Gunz, Mindel, Riss, and Würm glaciations) was that there were two main tills, with intermediate sands and gravels, which plausibly represented an interglacial episode. Observations supporting this idea were made by the Surveyors in Lancashire and then brought north with them as they moved into the Lake District. I was interested to find sites that exhibited such phenomena. They had supposedly been observed at one time in the fresh cuttings of the Oxenholme-Windermere railway, but they are long overgrown. The Oxford Quaternary geologist, John Boardman (1991), has described a sequence of tills in the area of Mosedale Beck, south of the Penrith-Keswick road, but I could not find a nice tripartite 'sandwich' of tills and gravels. (Boardman's stratigraphic sequence is largely pieced together from observations at different localities.)

Marr himself was doubtful whether there was a tripartite sequence in The Lakes, and thought that there might only have been one main glaciation. However, in his *Geology of the Lake District* (Marr 1916: 194) he reported a section about eight feet high, near Elterwater Bridge in Langdale, where he saw a red boulder-clay overlain by a grey one, and at one side of the section the tills were separated by some roughly stratified gravel. Visiting the locality in 1998, it was clear that there could be no eight-foot section below the Bridge as the river runs out into water meadows. Above the Bridge, there is a modest gorge, and above that—great piles of slate debris, with a road atop, on one side of the river and habitations on the other. Evidently, Marr's site had fallen victim to human activities. However, walking about a mile upstream I did find, near Chapel Stile, a small section with grey till superimposed on red; but a generous imagination would be needed to claim an interbedded layer of sands and gravels. So Marr's site is lost, but there is enough evidence surviving to suggest that he *could* well have seen a 'sandwich' at Elterwater.

As a footnote to the foregoing, it may be mentioned that 'glacial sandwiches' appear to be rare in The Lakes today, for, as was recognised in the nineteenth century, later glaciations seemingly cleared out the deposits left by earlier ones. The best 'sandwich' I have seen is that recently (1998) recorded as a potential RIGS locality by Mervyn Dodd (President of the Cumberland Geological Society), in the Calder Valley (NY069119), quite close to his home at Frizington. It was not known to John Boardman, as he told me in conversation.

One can, of course, give numerous examples where sites are lost through the march of industry; but others may be gained as new roads are built, etc. 'Development' is a two-edged sword. There is an interesting point to be made about the impact of forestry work on the efforts of at least one professional geologist. In the 1920s, the Cambridge geologist Tressilian Nicholas did much work on the Skiddaw Slates and became an adept graptolite collector. However, he never published his findings, and his 'wheel' had to be reinvented by Dennis Jackson, a Ph.D. student at Newcastle, in the 1950s. Nicholas himself was diverted from his geological work by being appointed Bursar of Trinity, a post that he filled with distinction (adding substantially to the College's already well-filled coffers). When he tried to return to his Lakeland studies in the 1950s he found his sites planted over with pine trees (Nicholas, Field Notebook, 1952, Sedgwick Museum, Cambridge). This seemed to have so discouraged him that he largely gave up geology and retired to the pleasures of the Senior Common Room at Trinity (where he lived happily and popularly until he was over a hundred) (*The Times*, 1989).

Evidence that disappears by natural causes

I was pleased to have the chance to interview Dennis Jackson in 1998, now retired to the Cotswolds. Following his Lakeland work on the Skiddaw Slates, he worked in Canada for some years, and subsequently at the Open University. He is still an important figure in the community of graptolite scholars. Long ago, Jackson's thesis (1956) made a name for the young man, and it is still an important work. He told me how he came to be involved in that kind of work. Reared in Cockermouth, he used to go out on geological excursions in the northern Lake District and later he decided to do his PhD in this area. A stratigraphic succession for the Skiddaw Slates had been established at Cambridge by Marr and more particularly by his former student Gertrude Elles. They had both adopted a particular view of the evolution of graptolites, as can be seen from their publications (Marr 1894, Nicholson and Marr 1895, Elles 1898, Elles 1923, Elles 1925, Elles 1933) and their manuscript notebooks held at Cambridge.

The details of the theory need not concern us. The point to be noted here is that Jackson, while an undergraduate, investigated a place called Setmurthy Quarry on the road north of Elva Hill, to the east of Cockermouth (NY184323). There, as he explained to me, he came to realise that Gertrude Elles's knowledge of the fossiliferous outcrops of the Skiddaw Slates was seriously incomplete, as there were fossil-bearing strata at Setmurthy which she had not examined. Thus Jackson was led to examine other areas that *had* been described by Elles, such as Barf near Braithwaite, and her zonal work more generally. It was from Jackson's revisions, in his doctoral thesis, based on his painstaking collection of graptolites (preferably done in the rain, as he informed me, since the fossils showed up better), that the modern understanding of the biostratigraphy of the Slates eventually flowed.

It was natural, then, that I wanted to see this important site for myself, and accordingly I visited it a few weeks after my interview with Jackson. My disappointment was great. The quarry was *completely* overgrown, and filled with hidden logs that snagged one's legs as one tried to wade into the undergrowth. There was scarce a rock to be seen, and the only pleasure in the place was the excellent crop of raspberries that it provided! It would be quite impossible to do any useful geology there in its present state.

Should it be made into a RIGS locality? The number of people interested in it from an historical point of view would be one or perhaps two (myself and Jackson). In fact, it cannot be demonstrated to be an important historical site by inspection: its importance can only be recognised from Jackson's publications (e.g., Jackson

1979) or from conversation with him. The story is not known to geologists. In fact, Dennis told me that I was the first person to whom he had related the history of the matter. I leave open, then, the question designating the quarry as a RIGS, but I am fairly confident that clearing the site now would be a waste of time and effort.

Evidence that disappears by conservation

I have discussed above the case of Stockdale and Browgill. Somewhat similar (though not related to Marr) is the case of the exposures of the dune-bedded Penrith Sandstone at Cowraick Quarry, Beacon Edge, near Penrith (NY 540308), an SSSI. This quarry too is hopelessly overgrown, though there are some paths through the reserve and the sandstone can be seen to advantage in some spots. According to a notice at the site (1998), the place is subject to a compulsory purchase order by the Eden County Council, and it is possible that it will be tidied up at some future time. Also, it should be noted that it is a reserve for animals and plants as well as for geology or geologists, and I was informed by a person I met in the quarry that it is an important habitat for owls. Be that as may, if you want to see good exposures of the dune-bedded sandstone, go to the river banks of the Eden at Coombe Clints, or better still to the parkland at Bongate, close to Appleby (NY 688199), where sheep are doing good work.

What do geologists think about it all?

I posed the same question to several of the many geologists who have worked in The Lakes that I interviewed in 1998: have you found your work seriously impeded by the depredations of fossil or mineral collectors, or students? Minerals seem to be more of a problem than fossils. Digging into a site may well expose more fossils, but it is less likely to reveal further good mineral specimens. These have mostly been cleared from the surface exposures, unless very common, like the chialtolite slates of the Skiddaw aureole. But for fossils, the geologists seemed to be surprisingly unconcerned. Barrie Rickards, for example, said he was still coming across splendid finds of well-structured graptolites in the Howgills that had never been reported by previous observers. Jack Soper said that if he found a good site, with important sedimentary structures for example, he would simply keep quiet about it if he thought it might get damaged by amateurs. Some geologists do not give grid references in their publications, but offer to provide information to *bona fide* personal enquirers. All agreed that the kiss of death for a site is to make it well known by referring to it in a popular guide-book or text-book. Sedimentary structures are specially vulnerable, and get damaged by people who must be mindless since the structures as

such usually cannot be removed (but can of course be photographed).

What messages all this may or may not have for geological curators in Britain, I leave readers to contemplate. I am only a visiting historian from the colonies.

Acknowledgements

I am indebted to Dr Frank Moseley for drawing my attention to the 'Marr' carving and to Dr Isles Strachan for providing the photograph used for Figure 1. I understand that the picture was originally taken by Birmingham student James M. Pike, studying the Coniston area in 1969. Thanks are also due to Mr Eric Skipsey for information about the 'Marr' carving and to the other geologists mentioned in the paper, who have kindly allowed me to record interviews with them in relation to my Lakeland project. The copies of sketch-maps from Marr's notebooks in the Sedgwick Museum archives are reproduced by courtesy of Mr Michael Dorling.

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THE CONSERVATION OF HISTORICALLY IMPORTANT GEOLOGICAL AND GEOMORPHOLOGICAL SITES IN ENGLAND

by Colin D. Prosser and Andy H. King



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Nationally important geological and geomorphological sites in Great Britain have been protected through town-planning and/or nature conservation legislation for more than fifty years. They are still, however, subject to development pressure. Many other countries still fail to offer their key sites any formal protection. The relatively high priority given to conserving these key sites in Great Britain stems from the importance we attach to these sites - our Earth heritage. The unique characteristics of Great Britain's Earth heritage, its richness and diversity, and its importance in the development of the sciences of geology and geomorphology, provide the justification for the priority given to Earth heritage conservation. A number of conservation designations and tools are available to help secure the long term future of historically important sites. In England, the Site of Special Scientific Interest (SSSI) framework is the major tool used to safeguard and manage key sites. Most nationally important historical sites are SSSIs. Other conservation options such as National Nature Reserves, Regionally Important Geological/ geomorphological Sites (RIGS), World Heritage Sites and Geoparks exist and their use could be extended. Successful conservation of our heritage of historically important sites requires greater awareness of their significance by both decision makers and the general public.

Colin D. Prosser and Andy H. King, English Nature, UK. Received 29th November 1998.

Introduction

In Great Britain we have a diverse, rich, and scientifically important geological and geomorphological heritage - our 'Earth heritage'. We have a wide range of rock types, representing a spread of geological time from the Pre-Cambrian to the Recent. Fossils are abundant, and in places, beautifully preserved, illustrating the evolution over millions of years, of life on Earth. We have igneous rocks, mineral deposits, folds and faults, caves, limestone pavements and spits and bars; all adding to the story of how the Earth's crust evolved into what we see around us today. These features, exposed in spectacular coastal cliffs, disused and active quarries, road and railway cuttings and in upland streams and crags, have been studied for many years, and played a key role in the history and development of the sciences of geology and geomorphology. They have shaped our landscape, our land use and our economy, and are important to our future.

Having such a diverse, rich, and scientifically important Earth heritage is, however, only part of the story. In today's world of ever-growing populations, increased consumerism and incessant pressure to 'develop', there

is a need for everyone who values our Earth heritage to play a role in its conservation, as key sites are under constant development pressure. In England, coastal protection, landfill, housing and marina developments are the main physical threats to sites. In many cases, these threats are a consequence of the widespread ignorance amongst decision makers and the general public of the importance of our Earth heritage. Few in society understand geology and geomorphology, and therefore few value it when development proposals place it under threat. Even though Great Britain is a world leader in terms of the policy and practice of Earth heritage conservation, the threat to sites, including historically important sites, remains very real.

Earth heritage conservation is a key part of the work of English Nature, England's statutory advisors to Government on nature conservation. In addition to the statutory conservation undertaken by English Nature, there is also an active voluntary sector, with Regionally Important Geological / geomorphological Sites (RIGS) groups, and other locally based geological groups, playing an important role in Earth heritage conservation, particularly at a local level.

Rationale for Earth heritage conservation

Having acknowledged that our Earth heritage in Great Britain is diverse, rich, and of considerable scientific importance, it is worth establishing which factors give the resource these characteristics, and make it so 'special' and worthy of conservation. A good indicator of current thought on this matter is the rationale presented by the conservation bodies and the geological/geomorphological community as a whole, explaining why we should value and fund the conservation of Earth heritage sites. The rationale for Earth heritage conservation given in English Nature's strategy leaflet *Conserving England's Earth heritage* (1995), is typical of the justification put forward in many documents, and expresses 'modern' thought as to why our Earth heritage is of value and worthy of conservation. It says:

"For its size, Britain has the most varied geology in the world, with many features being of international importance. Britain was also the birthplace for the science of geology, a legacy reflected in the numerous divisions of geological time and rock formations in international use today, named and defined from British strata."

Thus, the two factors highlighted as making our Earth heritage 'special' are: 1) its variety or diversity, and 2) its importance as the birthplace of the science of geology, the consequences of which are reflected in the numbers of type sections etc. The Earth heritage resource has many other values and uses in modern society. These include scientific research, education, recreation, and increasingly geotourism. It is, however, the diversity and historical importance of our Earth heritage which largely underpins these other uses.

In order to further understand the importance of the resource, and the rationale for its conservation, it is worth establishing whether the current rationale differs from that used in past debates concerning the value of our Earth heritage. What, for example, were the characteristics of the Earth heritage which originally inspired the British Government to initiate a statutory conservation framework, and a nature conservation service, to conserve it? - especially when many other countries have still not taken this step even today.

To answer these questions we need to go back more than fifty years to the post war period, when the Government of the day created the Wild Life Conservation Special Committee to examine how Government could better engage in a national nature conservation effort. The report of this Committee *Command 7122* was published in July 1947, and set the scene for conservation in Great Britain. As a rationale for Earth heritage conservation it stated:

"The reasons for safeguarding geological and physiographical features are not widely appreciated.

There are in England and Wales many such features which are of great interest. These are scattered throughout the country, for Great Britain presents in a small area an extremely wide range of geological phenomena. British geologists were pioneers in the creation of scientific geology and have since played an outstanding part in the development of their science. Classical sites are therefore numerous in Great Britain, attracting students from many countries."

As with the current justification for conservation, we see the 'diversity' and 'history of geology' aspects being central to the argument that British geology and geomorphology is 'special', and thus in providing a rationale for conservation. It is, of course, likely that 'diversity' and 'history' are linked, as the diversity of British geology played a key role in inspiring the pioneer geologists, who, in turn added value to our resource through their early work. The unavoidable conclusion in relation to why our Earth heritage is 'special', why we were 'quick off the blocks' in recognising its value for conservation, and why we are still active in its conservation, is that Great Britain's Earth heritage is: 1) diverse and 2) especially important to the history of geology.

The possession of such a valuable resource, with historical importance, is a national privilege, but brings with it a national responsibility to conserve and cherish the resource for ourselves, for the worldwide scientific community and for future generations to experience and enjoy.

Earth heritage conservation and legislation

As stated above, *Command 7122* (1947) laid the foundations for nature conservation in Great Britain and was followed in 1949 by the creation of the Nature Conservancy, and the passing of *The National Parks and Access to the Countryside Act*. This Act required the Nature Conservancy to notify local authorities of the location of important "geological or physiographical" features, and afforded some protection through the planning system. The next major legislative step was the passing of the *Wildlife and Countryside Act* in 1981. This improved the level of protection offered to Sites of Special Scientific Interest (SSSIs), as they were now called, and enabled potentially damaging activities to be identified for each site over which a site owner/ occupier must consult prior to undertaking the activity. By the early 1970s the Nature Conservancy had become the Nature Conservancy Council (NCC) and in 1990 the *Environmental Protection Act* saw the break up of the GB-wide NCC, and the establishment of the country based conservation agencies in existence today.

Conservation legislation relating to Earth heritage sites has remained fairly stable since 1981, but a review of

SSSI legislation is currently underway (Department of the Environment, Transport and the Regions, 1998) and greater protection for Earth heritage SSSIs is anticipated.

Historically important sites: conservation in practice

The policy and practice of Earth heritage conservation has been described widely in recent years (Nature Conservancy Council 1990, O'Halloran *et al.* 1994, English Nature 1995, Bennett *et al.* 1996, Ellis *et al.* 1996). In short, the primary activities are the identification, notification, management and promotion of SSSIs, coupled with general advocacy regarding their sustainable use. Although the SSSI series has been the backbone of Earth heritage conservation in England, and the main tool for the conservation of historically important sites, other conservation options do exist which offer further opportunities for historical and other sites. The growing RIGS initiative perhaps has most potential, but there are also National Nature Reserves (NNRs), World Heritage Sites and a new initiative from UNESCO, called Geoparks, all of which could be employed to better effect.

Sites of Special Scientific Interest (SSSIs)

SSSIs are undoubtedly the main tool in conserving important Earth heritage sites in England, and there are about 1300 SSSIs notified on account of their geological or geomorphological interest. Many of these sites have a historical importance and most, if not all, of the key sites of importance to the development of the Earth sciences are included in this coverage.

In practical terms, a SSSI is a nationally important site notified to the Secretary of State for the Environment, the relevant planning authority, and the owner/occupier of the land in question, as being of 'special' interest on account of its geology or geomorphology. Documentation includes a map showing the boundary of the SSSI, a brief citation explaining its scientific interest, and a list of activities which may damage the interest of the site, and over which consultation with English Nature is required prior to the activity being undertaken. SSSI status should ensure that there is no development or damaging activity on a SSSI without full consultation with English Nature.

In England, and Great Britain as a whole, candidate SSSIs have been identified through the Geological Conservation Review, a systematic site selection exercise carried out on a Great Britain wide basis (Ellis *et al.* 1996). Assessment and selection of sites was undertaken in discrete subdivisions of the earth science subject area, termed 'blocks'. 'Blocks' can be

stratigraphical divisions (eg Aalenian - Bajocian), stratigraphical and geographic divisions (eg. Quaternary of South-West England), or other subject divisions (eg. Caledonian structures). It is interesting to note that although the history of geology is a major reason we undertake Earth heritage conservation, there is no history of geology 'block'. Such a 'block' was planned at one time (Wimbledon 1990) but never materialised. This was largely due to the fact that most, if not all, nationally important historical sites were already included in the GCR coverage on purely scientific grounds.

GCR site status offers little protection in itself, however. It is only when the site is approved by the Council of the appropriate country conservation agency as being of SSSI standard, that statutory conservation legislation comes into play. The site is then legally protected through planning law against development, and by nature conservation law with respect to damaging operations. This is not to say that a site is perfectly safe from damage, but that there is a very strong presumption against any activity likely to damage the interest for which the site was notified.

In addition to the safeguard aspect, SSSIs may also be subject to site management work and enhancement, providing the owner/occupier of the site is in agreement. English Nature regularly funds work to improve exposure, excavate important specimens or produce interpretation panels or trails (Larwood 1994, Prosser 1994).

Sites of importance to the history of geology, protected and/ or managed under SSSI legislation are illustrated below. Examples have been chosen to illustrate the range of historically important sites in the SSSI series, and some of the management options available:

Dundry Hill, Somerset

There are several SSSIs located in this area (eg. Dundry Main Road South Quarry SSSI, Barns Batch Spinney SSSI) which expose highly fossiliferous Inferior Oolite limestones. These sites are associated with William Smith, the 'Father of English Geology', whose work was the beginning of historical and stratigraphical geology as we know it today. Smith came to Somerset in 1791, to begin colliery ground surveys. In 1793 he was requested to prepare preliminary levels for a proposed canal to link the Somerset coalfield with the Kennet & Avon Canal, and thus with London. Whilst working on this canal, Smith first realised the significance of stratigraphically 'organised fossils'. His demonstration in 1799, to his friends on Dundry Hill, of the succession of local rocks and their fossils, was perhaps the first geological excursion, and contributed to Bath's reputation as the "Cradle of Geology" (Ager 1992).



Figure 1. Ludford Corner within Teme Bank SSSI, Shropshire. This famous Murchinson site is the historical British type site for the Silurian - Old Red Sandstone boundary. It is kept clear for study, and a small sign is in place to explain its importance. Removal of the Ludlow Bone Bed Member by collectors is still, however, a concern. (Photograph: Colin Prosser)

Ludlow area, Shropshire

The counties of Hereford, Shropshire and Worcestershire occupy a particularly important place in both the history of geology and Lower Palaeozoic stratigraphy. Consequently, there are a substantial number of Earth heritage SSSI in these areas. Mortimer Forest SSSI is of international significance as it contains recognised stratotype sections for the Gorstian and Ludfordian stages of the Ludlow Series. Teme Bank SSSI, includes Ludford Corner, one of the key localities studied by Murchison (1839) in his classic work on Silurian rocks. This site is the historical British type site (Murchison 1839) for the Silurian - Old Red Sandstone boundary (Figure 1). It is of course infamous for its 'lack of exposure' of the Ludlow Bone Bed Member, an illustration of why some Earth heritage sites need to be managed!

De La Beche unconformity, Vallis Vale SSSI, Somerset

Alongside the unconformity at Thornton Force, used in 1802 by John Playfair to support Hutton's theories of uniformitarianism, the De La Beche unconformity section at Vallis Vale SSSI provides one of the most historically important unconformity sites in the SSSI coverage. It exposes tilted Lower Carboniferous

limestones overlain by near flat-bedded Inferior Oolite limestones. Henry De La Beche, English in spite of his name, was a pioneer of the geology of South West England in the 1830s and 1840s, and founded the British Geological Survey in 1835. The site has recently been cleared to improve exposure.

Reed Hill SSSI, Oxfordshire

This site in Oxfordshire includes the former Stonesfield Quarry, from which William Buckland, in 1824, described *Megalosaurus bucklandi*, the first ever dinosaur to be formally recognised. The site also yielded, in 1812, the first known Mesozoic mammal (Benton and Spencer 1995).

Botallack, Cornwall

Hard rock, mineralogical and structural geology sites have also had their part to play in the historical development of our science. About one-third of Earth heritage SSSIs in England are notified for their igneous petrology, mineralogical or structural importance. During the 18th and 19th centuries the Cornish tin mining industry was at its peak. Some 21 SSSIs are notified in Cornwall to represent this part of our geological heritage, and the metallogenesis of the South-western most parts of England. One classic site is Cape



Figure 2. Wren's Nest NNR, West Midlands. As an NNR the prime objectives for the site are to manage it for conservation. In 1977, the Nature Conservancy Council cut a trench to provide a dip section of the Nodular Member. This location still forms part of the Wren's Nest geological trail. (Photograph: English Nature collection)

Cornwall to Clodgy Point SSSI which includes the famous tin mines at Botallack. Spoil heaps here still contain examples of the tin ore cassiterite and associated copper and arsenic minerals.

National Nature Reserves

National Nature Reserves (NNRs) are SSSIs, designated, owned and managed with the prime objective of maintaining and enhancing their scientific interest. There are only two NNRs in England designated solely on Earth heritage grounds, Swancombe Skull Site, in Kent, and the Wren's Nest in the West Midlands. However, many biological NNRs also contain geological/geomorphological SSSIs, and thus offer additional opportunities for enhancement, as clearance work, interpretation, and scientific study is easily facilitated where conservation is a primary land use. For example, at Wren's Nest, a site linked with Murchison and the industrial revolution, an extensive trench was cut through the Nodular Member of the Much Wenlock Formation in 1977 to provide a well exposed dip section for study (Figure 2). This is now part of a marked geological trail.

Regionally Important Geological/geomorphological Sites (RIGS)

Over the last 10 years the RIGS movement has continued to grow, and has added a strong voluntary, and local slant to Earth heritage conservation in England. The concept of RIGS is described in Harley (1994) and Prosser and King (1998), but in short involves local groups of geologists and conservationists working at a county level, identifying, managing and promoting locally important Earth heritage sites. Although not afforded statutory protection, many RIGS are brought to the attention of local planners, and thus inform decision making with respect to development proposals that may impact on the site.

The RIGS approach offers many opportunities to identify, manage and protect locally important sites which may have a historical interest. For example, not all 'Murchison sites' are SSSIs, and a locally important site could be conserved and promoted through RIGS. The RIGS approach is also flexible enough to enable headstones of famous geologists to be designated, or to include sites such as the Crystal Palace Park, London, which is well known as the home of the first full-sized



Figure 3. Kimmeridge Bay, part of the South Dorset Coast SSSI, Dorset. Although protected under SSSI legislation, World Heritage status for the Dorset Coast would add an international tier of protection for these cliffs so important worldwide in terms of Jurassic stratigraphy. (Photograph: Peter Wakely)

reconstructions of "dinosaurs", the mid-Victorian interpretations of Sir Richard Owen and Waterhouse Hawkins.

World heritage and Geoparks

In comparison with wildlife sites, Earth heritage conservation is way behind in terms of European or wider international conservation designations. The World Heritage Site at the Giant's Causeway, County Antrim, is well known to most geologists, and illustrates how an international designation has been used to enhance conservation levels at a site. The Dorset Coast (Figure 3), already protected under SSSI legislation, is

currently being nominated for World Heritage status. It is, of course, of outstanding importance for Jurassic stratigraphy, and the site of Lang's, Jackson's and Arkell's intricate descriptions of the stratigraphical succession, and contains the localities where Mary Anning collected ichthyosaurs, plesiosaurs and other fossils during the last century. This site is currently the most realistic option for conservation in England under World Heritage status, and much could be achieved for the historically important sections here. Outside this site, however, there are probably more promising avenues to explore than World Heritage status, when seeking likely gains for the conservation of historical sites.

One such avenue is the new UNESCO initiative, Geoparks, which is soon to be implemented. This offers a potential designation for sites of 'lesser status' than World Heritage sites, and appears to favour sites where management plans are being implemented and where Earth heritage interest is being integrated and promoted alongside other assets such as wildlife or industrial heritage. It is too early to judge the value of this initiative, but it clearly has potential for adding an international tier of recognition to current conservation efforts on historically important sites.

Conclusion

Alongside the diversity of Great Britain's geology and geomorphology, it is the historically important sites, resulting from the work of the great pioneers of geology, which give our Earth heritage its outstanding value. The historical importance of many of our sites is a major reason why Earth heritage conservation takes place in Great Britain. This probably explains why we were so 'quick off the mark' as a nation in recognising the value of our sites, and the need to conserve them. However, with such a historically important resource, there comes a national obligation for conservation. This obligation is one we are striving to meet, even though statutory Earth heritage conservation in England is based primarily on scientific interest, and historical importance is implicit rather than explicit! SSSI designation is the major tool employed in conservation, and enables sites to be protected, studied, enhanced, and enjoyed. NNRs, RIGS, World Heritage Sites and Geoparks offer further options for conservation, with RIGS, and perhaps Geoparks, offering most promise. Successful conservation requires public support, and if we are to safeguard these sites where the science of geology developed, we all need to work to promote our science to a much wider audience. Understanding leads to value, which in turn leads to conservation.

Acknowledgements

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THE HISTORY OF GEOLOGY IN NORTHERN SCOTLAND: COMMENTARY ON ARCHIVAL SOURCES

by Michael Collie



Collie, M. 1999. The history of geology in northern Scotland: commentary on archival sources. *The Geological Curator* 7(1): 35-39.

In 1974 an archive of scientific material was established by the Moray District Council in northern Scotland. Accessions included items pertaining to local geologists including Hugh Falconer, John Grant Malcolmson, Joseph Prestwich and the family of George Gordon. In the 1980s this archive was broken up and material dispersed. Archives are valuable sources for historians of geology and give contemporary insights into the lives and times of geologists and their peers, and should be preserved.

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Introduction

There is no point in having a future if you do not have a past. Even international terrorists, who seem to be gunning for a future unrelated to the past they wish to destroy, in fact have a history that can be examined and analysed. Nor can they be understood without such analysis. In ordinary life there are very few people who might say, for example: I want to marry you but not if you want to know who I am. On this analogy only present-day geologists don't need a history of geology - but that's just today: tomorrow they will be history. Geology is in fact one of the more historical of the disciplines. Its future depends entirely on the fact that it was interesting in the past: no one can be depended upon to be interesting in the future, but we all live in hope. Like an ancient friend of the other sex, geology's future is its past, the past that was cared for because so engaging and relevant to meaning. What follows is predicated on the opinion that geology's past cannot help but be important in the future simply because ignorance of it will always be an undesirable human deprivation. Why do without this important dimension of knowledge? I start with an example of what happens when conservation is neglected and then assess in a cursory fashion the present state of affairs in the north of Scotland where so much distinguished geological work has been conducted.

Establishment of a new scientific archive in Forres in 1975

In 1975 the new Moray District Council created in Forres an archival service - the first in the region - to "preserve written remains as near their birthplace as

possible". This slightly unusual wording may have reflected anxiety about the South. It had often been observed that documents and artifacts, like people, if they went south, frequently failed to return, especially if the south meant London. An archivist was appointed who would be responsible for the collection, cataloguing and preservation of documents and documentary collections relating to Moray. It was understood that such collections would include historically important scientific material. The concept of conservation, as opposed to preservation, was probably not understood, except by the archivist, but an encouraging beginning had nonetheless been made.

Over 500 collections of documents were accessioned over the next ten years, including the papers of a number of solicitors, notably the Leasks, who had handled the affairs of local geologists. Also deposited during this ten year period were the notebooks and some documents of the Elgin antiquarians, H.B. and L. Mackintosh, as well as a considerable number of papers relating to Hugh Falconer, John Grant Malcolmson, J.D. Innes, Joseph Prestwich and members of the family of George Gordon. Gordon's own papers, those he allowed into the public domain, were already in the Elgin Museum a dozen or so miles to the east - a collection that included correspondence with John Lubbock, T.H. Huxley, Roderick Murchison, John Horne, Darwin, George Roberts and other scientists, many of them geologists. Then to the new District Record Office in Forres Mrs Dora Gordon, and later Lesley Anderson, deposited a large quantity of important supplementary material - further correspondence, scrapbooks, photograph albums and so forth. Once the archive had established itself, the recently appointed

archivist was able to arrange for documentary collections that, as it were, belonged to the north, to be moved from the Scottish Record Office in Edinburgh, once it had been confirmed that the storage facilities in Forres were adequate.

This was obviously a preservation success story. A society had decided through the agency of its own elected local council - the Moray District Council - that it was expedient, timely and useful to recollect its own past for future generations by gathering together the physical memorabilia of that past without prejudice or prejudgement as to the importance of individual items, and by acknowledging by the creation of a publicly funded institution its responsibility for the safekeeping of what its citizens had collected, purchased, inherited, preserved and treasured. If there was not an exclusive focus on geology, or on science in general, that was not because members of council were unaware of the important scientific work that had been conducted in the north of Scotland during the previous two hundred years.

Undoing the good in the 1980s

This encouraging start was almost immediately negated by a barbaric act of self-induced social amnesia. Despite all the good work that had been done in the Moray District Record Office, problems arose in the 1980s - problems of personality, ambition, bureaucratic competitiveness and anti-historic sentiment - with perhaps an admixture of mere ignorance - that resulted in the Director of Libraries ordering that all five hundred privately deposited collections should be immediately withdrawn - that is to say, that they should be disposed of as no longer the responsibility of the Record Office. Nothing was worth remembering in the district of Moray, she thought, except the proceedings of the district council. The archivist was given two weeks to dispose of the by then considerable store of documents. They should be returned to the original depositors, she ruled, or donated to reputable Scottish institutions, or destroyed. By whatever means, the physical space had to be cleared, and cleared immediately. The good faith, social intent and broad cultural motives of the depositors were to be ignored.

No record was kept of these frenetic, ill-considered clearances. Consequently, it could not be determined when the dust of battle had settled whether the whole of the Hugh Falconer collection had been returned to the Falconer Museum. Local users said that many items were missing, including a portrait of him. Possibly some but not all the papers of Hugh Miller were recovered. Part but not the whole of Lady Gordon Cumming's correspondence about Palaeozoic vertebrate fossils ended up in the Falconer Museum. A number of

books, and some illustrative material, relating to Harvie-Brown, or belonging to him, were siphoned off by the Elgin Library. Though these actually belong with other Gordon papers, the Library is apparently disinclined to part with them. A small part - the extent of loss cannot be determined exactly - of the George Gordon material deposited in Forres found its way to the Elgin Museum but only because of the common-sense and public spiritedness of Euan Gordon. The Joseph Prestwich situation is not clear since there appears not to be any record of what existed before the disruption. As to the George Gordon papers, what happened to them is described in the provenance section of the catalogue of his correspondence I prepared with Susan Bennett (Collie and Bennett 1996).

Because there is little to be done in the face of such barbarism except despair at human folly, the temptation is strong at this point to abandon the Geological Society for a night on the town which in my imagination always means returning to la Brasserie de nouvelles idées socialistes, where evenings usually start with a double Durckheim on a single ice-cube with a twist of Saussure, where the music is distinctly pre-historical, where an old-fashioned table-dancer gyrates boringly in a G-string of Theory, and where there is a sinister, heavily guarded closed door at the back of the smoky bar bearing the sign "Meaning Only". Theory has its own gratifications, its own cabalistic historiography, its own mechanisms for escapes from reality. But though it's tempting to search out intellectual liaisons that transcend memory by obliterating it (let's live for the moment and forget the past) I'm on this occasion opting for that plain marriage or modern relationship that characterizes the way the scholar, archivist or librarian knows, and tirelessly recollects, records and conserves, his or her subject. In this sober mood I shall make a few remarks in sequence about the processes of archival research in the history of geology. The carnival will have to be on a different occasion.

The present state of archival enquiry

First, then, for collecting. I've wondered what might be an appropriate metaphor for the present state of archival enquiry among historians of geology, considering several possibilities and finally opting for the one that follows. Recently I've been having a look at some of the topographical maps produced by the Society for Diffusion of Useful Knowledge during the 1830s and 1840s which are not only truly fascinating documents in their own right but were also used, some of them, as the basis for subsequent geological maps. In the 1830s some areas were mapped confidently because many people had been there. Some carried intriguing but inaccurate place names, aural transliterations,

sometimes from the demotic as heard by travellers, sometimes from Greek classical texts as known to missionaries. Some areas were just not known at all and one reads large-font inscriptions on the maps such as “extensive salt marshes” or the “lands of the Kalmuk Tartars”. In some areas distances are not known except as measured by camel journeys. 112 days from A to B - by camel. So it is in the history of geology. We have our ancient Tashkents and Samarkands in the copyright libraries, at Keyworth, and here in this house; but we are weak on the additional documents waiting to be discovered. Whether they are there or not is unknown. The point is, collection must obviously precede preservation and conservation, and there is no point in talking about the one without the other. In my own work, for example, there exists in Haslemere the list of those persons who declined to lend Archibald Geikie letters and other documents in their possession when he was writing his life of Roderick Murchison. Such leads badly need to be followed up, and there are hundreds. In Scotland one also thinks of the muniment rooms, cellars and attics of old houses. Some of Hutton’s drawings were found at Penicuik after all. Must there not be other treasures still to be found? There are many frustrations of course. It was frustrating when the curator of Dunrobin Castle very kindly brought up previously neglected autograph manuscripts from the castle cellars but declined to let us search for ourselves. We were close but not close enough. Furthermore, because the names of dead geologists do not invariably enjoy everyday currency many owners of autograph material do not know what they have, would not recognize the signatures and handwriting of even famous geologists, and have no knowledge of the subject matter beyond recognising that it had been profound importance to some ancestor or other. The editor of the Disraeli letters, who believed in the efficacy of advertisements in local newspapers, once heard from a construction worker in Ontario “Yes, we have some of those. They’re useful for all sorts of things”. More directed research on the collection side of our life is what I’m recommending.

Calendar making

Secondly, calendar making. In - to select a specific example - the book *Archives of the Scientific Revolution* (Hunter 1998), as edited by Michael Hunter and published by the Boydell Press, there is repeated insistence on the need for chronological listings of extant autograph documents by author or subject, and this for several reasons. First, it’s safer for the scholar, and even for the free-ranging theorist, to be able to consult a reliable macrolisting or enumeration than be confined only to what comes to hand easily. Second, statistical and geographical analysis of the kind practised by Robert Hatch in his *Between Erudition and Science*

in the book I’ve just referred to is only attainable if as much as possible of the whole picture is known. The exchange and flow of documents regarded historically, the movement of letter-texts in space, and the quantitative analysis of the data, relates directly both to the formulation of scientific ideas at specific points in time and to the biographies of scientific authors written well after the events being recounted. Third, it is also important to be able to detect and analyse those gaps or silences in the production of texts that alert one to the fact that something has interrupted a person’s working life, and perhaps his or her research life as well. Then again, having a census or calendar of all extant documents, published and unpublished, saves one from using primary source material in an arbitrary way, as sometimes people do, to support some thesis or other, when they quote out of context, giving the appearance of referential accuracy when there in fact may be none. Such badly needed calendars or enumerations exist for very few Scottish geologists.

Preservation and access

Thirdly, preservation and access, where preservation means creating the environment which will safeguard irreplaceable documents. In the Falconer Museum in Forres the surviving papers of Hugh Falconer, Malcolmson, Hugh Miller, Joseph Prestwich, Lady Gordon Cumming and others are sensibly stored and protected, the important originals only being made available to those who can demonstrate the need to see them. In the Elgin Museum, the papers of T.H. Huxley, Roderick Murchison, Hugh Miller and others named in our catalogue of the correspondence of George Gordon (Collie and Bennett 1996) are in the process of being re-stored in acid free paper and boxes. The user will first see this catalogue, or a typescript or photocopy of any original. At Tarradale House the important collection of geological books that once belonged to Amy Yule is secure but not in a temperature or humidity controlled environment. Unfortunately no catalogue yet exists. At St. Andrews the individual items in the Forbes Collection - the university’s principal set of geological documents according to Dr Norman Reid - have recently been annotated and put on line with the help of Follet or non-formula funding money. The annotations are good. Access can be made through the St. Andrews web-site. But legitimate users are not denied access to the originals. Aberdeen also had Follet money but I believe has used it on nongeological collections pre-dating the founding of this Society. It is chiefly the James Nicol papers that demand our attention at Aberdeen. Some fortitude of mind is needed for the contemplation of documents in the cellars and estate office of Dunrobin Castle. I already knew of Humphry Davy’s geological survey of the Sutherland estate when I first went there, but have

not tracked down the correspondence and related documentation that probably complemented it. Enumerations, check-lists and catalogues on the one side, and editions on the other, are part and parcel of the same preserving activity. Although there is a prejudice in some parts of the academic world against editions (editors never gain admission to the back room of the Brasserie and never have the big ideas that theorists crave) they are undoubtedly of great assistance to those who are worried about the unique documents in their care and to the users who may wish to consult them. Careful editorial work is needed in the history of geology at least until the map of the subject has been completed.

Conservation

In the North of Scotland, conservation - that is, the hands-on treatment of individual objects whether documents, maps or printed books with a view to safeguarding their actual physical features - is only practised at the University of Dundee where, however, there is an excellent conservation unit, with a team of seven trained conservators working in a purpose-built laboratory. This well-equipped and well-directed unit could scarcely be improved upon. The snag is money. The conservation of even a single item, including the undoing of other people's amateurish attempts to save it, takes a great deal of time so is necessarily expensive. Still, the service is available. If, for example, you wished to save the letters of John Grant Malcolmson in the Falconer Museum which are in a terrible, dried-out, crumbling condition you could ask the Conservation Unit at Dundee to provide an estimate of cost. The estimate itself would be priced at £250 a day. External funding would thus be needed before even essential work could be done. If I'm advised correctly this is the only conservation unit in the North, though there are also qualified conservators in Edinburgh and Glasgow. Regrettably, no conservation work on geological documents is underway at the moment.

Possibly my passionate belief in the importance of archives stems in part from experiences on the literary side of life. There the model is of supposedly standard biographies and critical works being written fairly soon after an author's death, the books produced being shaped both by the cultural preferences and determinants of the period, and by the limited extent of the information at hand. Such preferences and determinants would include, perhaps, a belief in the right to privacy, the tactful avoidance of anything sexual or supposedly scandalous, and a distaste for psychological analysis. The information these old authors had access to cannot be avoided because in many cases they knew of documents now lost, but the very mass of new data that

quickly became available through the saleroom over a period of, say, a hundred years soon created an urgent need for re-evaluation and overhaul. This process has informed the study of well-known novelists like Dickens, Hardy, Meredith, Trollope and many others. In each case, new information of a documentary kind that was not in the public domain in the nineteenth century, becoming available in the twentieth, created the opportunity for more incisive, fully-documented and culturally convincing biographies. In the study of literature this was revolutionary. In the history of geology the road to free enquiry has often seemed blocked by massive ancient biographies and autobiographies, such as those of Lyell and Prestwich, that give the appearance of being definitive though they are not. It is essential that these should be infiltrated, deconstructed, checked against new evidence, and reconstructed. Let me give an example - Geikie's suppression of Roderick Murchison's remarks on war. As an imperialist Archibald Geikie could not stomach Murchison's criticisms of Sir John Moore in Portugal and Spain even though Murchison had participated in the retreat to Corunna and Geikie had not. But a consequence of suppressing Murchison's journal entries about the conduct of the retreat was that he also had to suppress parts of Murchison's account of his own experiences, experiences that he had had no reason to invent. This suppression of evidence has contributed to the later interpretation of Murchison's military career. He has been made to have believed in the foreign excursions of the British army whereas the opposite was true. In such instances, and there are many, the rights and wrongs of ancient interpretations can only be adjudicated on the basis of freshly examined archival evidence. Without such evidence one gets trapped into superficial Whiggish or "presentist" interpretations not based on primary documents but only on changed viewpoints and feelings.

My willingness to give this brief talk stems from the observation that in the history of geology as currently conducted there exist two principal encampments. In the one rests a large group of distinguished intellectuals who, like medieval knights in search of the Holy Grail, tirelessly search for meanings that transcend every day life, not least the every day life of the field geologist. They wish to discover the ultimate justification for being interested in the past, not by settlement, but by living off the land as they bravely travel across it, and by telling stories around the camp fires about how knowledge appears to have been constructed in the foreign fields they have visited. In the other encampment are the artisans who, like the citizens of a bastide, depend upon close if intellectually limited correlations between what they make, what they know and what others before them have done. They keep records, but

are suspicious of stories, even while enjoying them. They respect field geologists because they provide useful knowledge which, even if not absolutely true, may have many applications: It is true that the Knights Templar had the habit of sacking the bastides, torturing the artisans and raping the women, but in the present day and age co-existence is to be preferred, since coexistence will permit the preservation and conservation of whatever either party has collected.

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Appendix 1: Selected addresses

The Department of Special Collections and Archives, King's College, University of Aberdeen, Aberdeen AB24 3SW, Scotland. [Archivist's position vacant. Phone 01224-272598]

Library Conservation Unit, Main Library, Smalls Wynd, University of Dundee, Dundee DD1 4HN, Scotland. [Director: Ylva Player-Dahnsjo. Phone: 01382-344094; e-mail: y.m.t.playerdahnsjo@dundee.ac.ul. The unit services all university libraries on a non-profit contract basis.]

- The Elgin Museum, 1 High Street, Elgin, Moray 1V30 1EQ, Scotland. [Contact Mrs Susan Bennett, Curator, phone: 01343-543675]
- The Falconer Museum, The Tolbooth, Forres, Moray 1V36 1PH, Scotland. [Contact Alisdair Joyce, Senior Museums Officer]
- Moray District Council The Highland Council Archive, Inverness Library, Farraline Park, Inverness 1VI 1NH, Scotland. [Contact Robert Steward, Archivist, on 01463-220330]
- The North Highland Archive, Wick Library, Sinclair Terrace, Wick KW1 5AB, Scotland. [Contact Brenda Lees, archivist, phone: 01995-603000]
- Department of Special Collections, St. Andrews University, North Street, St. Andrews, Fife KY16 9TR, Scotland. [Contact Dr. Norman Reid, Keeper of MSS, phone: 01334-462324]
- The Scottish Records Association, c/o Glasgow City Archives, Mitchell Library, North Street, Glasgow G3 7DN, Scotland.
- The Scottish Society for Conservation and Restoration, The Glasite Meeting House, 33 Barony Street, Edinburgh EH3 6NX, Scotland.
- Scottish Conservation Bureau, the Technical Conservation, Research and Education Division of Historic Scotland, Longmore House, Salisbury Place, Edinburgh EH9 1 SH, Scotland.
- The Scottish Museums Council, County House, 20-22 Torpichon Street, Edinburgh EH3 8JB, Scotland.

LOST & FOUND

Enquiries and information, please to Patrick Wyse Jackson (Department of Geology, Trinity College, Dublin 2, Ireland; e-mail: wysjcknp@tcd.ie). Include full personal and institutional names and addresses, full biographical details of publications mentioned, and credits for any illustrations submitted.

The index to 'Lost and Found' Volumes 1-4 was published in *The Geological Curator* 5(2), 79-85. The index for Volume 5 was published in *The Geological Curator* 6(4), 175-177.

Abbreviations:

CLEEVELY - Cleevely, R.J. 1983. *World palaeontological collections*. British Museum (Natural History) and Mansell Publishing Company, London.

GCG - *Newsletter of the Geological Curators' Group*, continued as *The Geological Curator*.

LF - 'Lost and Found' reference number in GCG.

250. William Lonsdale's Permian bryozans from Tasmania.

Catherine Reid (School of Earth Sciences, University of Tasmania, G.P.O Box 252-79, Hobart, Tasmania 7001, Australia [tel: Australia (03) 62 262 478; e-mail: C.Reid@utas.edu.au]) writes:

I am a Ph.D. student at the University of Tasmania currently studying the Permian Bryozoa of Tasmania and NSW. Charles Darwin made some early collections here, and gave the Bryozoa to William Lonsdale, who described them in an appendix to Darwin's 1844 *Geological Observations*. These specimens are now lost.

Paul Taylor (Natural History Museum) told me that Lonsdale was associated with the Geological Society from 1829 to 1842, and that a number of his described specimens from various publications were once held by the Society. The Geological Society collections were transferred to the Natural History Museum, but Darwin's Tasmanian bryozoan specimens were not among them and neither institute appears to hold a record of them.

I contacted the Bath Royal Literature and Scientific Institute after learning of Lonsdale's earlier association with it and was forwarded to Trudy Wallace, who is compiling Darwin/Jenyns correspondence. Nothing came from this.

The specimens for which I am searching were collected from near Hobart, and include type species for two genera. However without specimens and the inadequate description of the 1840s many questions are raised and unanswered. The retrieval of these specimens, or even a record of specimen numbers would be a major step forward in bryozoan taxonomy here.

Specimens were collected by Charles Darwin from Hobart on the Beagle voyage, and may be labelled as

either Polyzoa or Corals, from either Hobart, Storm Bay or southern half Van Diemens Land.

Species names are *Fenestella ampla*, *Fenestella internata*, *Fenestella fossula*, *Stenopora tasmaniensis*, *Stenopora ovata* and *Hemitrypa sexangula*.

Any help readers are able to give in locating this material would be greatly appreciated.

Hugh Torrens (Dept. of Earth Sciences, University of Keele, Staffs, ST5 5BG, U.K.) responded:

I feel sure the answer lies in Cambridge among the Darwin manuscripts. Some first thoughts: (1) It is certainly not at Bath see *Newsletter of the Geological Curators' Group*, vol. 1, no. 3, 1975, pp. 100-101. His last donation to them was in 1828. (2) the *Bulletin of the British Museum Natural History (history series)*, vol. 19, part 1, p. 109 records a "large collection of fossils ex. Lonsdale at the British Geological Survey, Keywoth, Nottingham" ex. the former Geological Society Museum. I feel sure this should be your next place to try.

Patrick Wyse Jackson (address above) also responded:

Robin Wass of the University of Sydney published a paper in 1968 on the Permian Polyzoa from the Bowen Basin (*Bulletin Bureau Mineral Resources, Geology and Geophysics* 90) in which he described five of the taxa listed, and noted that neotypes had been designated for three as follows:

Stenopora tasmaniensis: neotype UTGD 53639 (Smith *et al.* in press); *Stenopora ovata*: neotype BM(NH) PD4604 (Nicholson & Etheridge 1886, p. 174-5); *Fenestella fossula*: neotype SUGD1406 (Crockford 1941a).

Although Wass collected from the possible type locality for *Protretopora ampla* no suitable material for erection of a neotype was available to him.

251. Sir William Logan (1798-1875)

Charles Smith, 2056 Thistle Crescent, Ottawa, Ontario, Canada, K1H 5P5 [Phone: (613) 733-3980; Fax: (613) 733-9344; E-mail: chsmith@istar.ca] writes:

I am attempting to locate unpublished documents related to Sir William Logan (1798-1875), Founder and first Director of the Geological Survey of Canada. The principal documents would be letters to and from him. The stages in his career include (i) studies in Edinburgh (1814-16); (ii) work as an accountant in London (1817-30); (iii) managing family interests in Forest Copper Works, Swansea (1831-39); (iv) Director of the Geological Survey of Canada (1842-69); retirement years (1869-75).

Graham McKenna of the BGS has referred me to your column as "regularly used by researchers looking to locate fugitive information and I know it does lead to results". A good recommendation!

By way of background, there are about 3600 known Logan letters, the bulk of which are contained at the McGill University Archives and the National Archives of Canada. But there are probably a number of others, scattered around in remote locations, which would help to fill in missing parts of his career.

Thank you for your help.

BOOK REVIEWS

Carter, D. and Walker, A.K. (eds) 1999. *Care and Conservation of Natural History Collections*. Butterworth-Heinemann Series in Conservation and Museology. The Natural History Museum, London and Butterworth-Heinemann, Oxford, xxii + 226pp. Hardback. ISBN 0-7506-0961-3. Price: £50-00.

The earth sciences have already been well served in this series with volumes by Howie (1992) and Collins (1995) and the interpretation here is of Natural History covering botany and zoology. This is an essential text for museums and other institutions where collections of biological material are housed or used. It would be of particular value in universities where many such collections originate as several of the difficulties in caring for specimens could be avoided by better collection and initial storage methods. Preventive conservation is less traumatic and more effective than many of the cures proposed.

The editors have managed to blend the contributions of 14 authors into a readable and comprehensive account of current understanding of best practice in conservation. Chapters cover each of the major categories of specimens - vertebrates, insects and other invertebrates, vascular plants, non-vascular plants and fungi. There are contributions on fluid preservation, genetic material, collection environment, pest management and on policies and procedures. Appendices cover common themes of documentation, papers and inks, disaster planning and a sobering case study of a flood in Austria so severe that cobbles from the museum courtyard were mixed in with geological specimens which lost their adhesive labels. A curators and conservators horror story.

Each chapter sets out to introduce its historic perspective, outline current best practice in preparing specimens for long term preservation and outlines options for remedial treatment. In this, each achieves its objectives although it is not a recipe book for simple solutions. Conservation is a complex business and developing rapidly as a science and profession. The extensive bibliographies (the chapter on vertebrates has 200 references) are valuable although some chapters have short lists reflecting the novelty of parts of the discipline. Lists of suppliers are patchy and could have been inserted as an appendix together with useful addresses. The Biology Curators' Group (BCG) is not mentioned although many of their publications do feature.

The one common theme which deserves a better hearing is health and safety, banished to a brief section under Policy and Procedures. Each contributor in the technical sections has lists of chemicals used historically or currently recommended despite their hazards. Most have highlighted these well but the less experienced operating outside well equipped museum laboratories with seasoned staff at hand could stray into very dangerous areas. They would be better advised to follow the maxim 'if you don't understand it, don't do it' and refer to Clydesdale (1990) for the personal hazards associated with some of the chemicals which are mutagenic, carcinogenic, poisonous or inflammable and the excellent chapter by Howie (1992).

These issues aside this is an important text and essential for biological curators, museums, and research centres. It is good value and will stand the test of time. It has some geological insights, particularly for those dealing with Quaternary material and should be on the shelf of any curator responsible for biological collections.

CLYDESDALE, A. 1990. *Chemicals in Conservation: a guide to possible hazards and safe use*. (2nd edition). Scottish Society for Conservation and Restoration.

COLLINS, C. (ed.) 1995. *The Care and Conservation of*

Palaeontological Material. Butterworth-Heinemann, Oxford, xi + 139pp

HOWIE, F. (ed.) 1992. *The Care and Conservation of Geological Material: Minerals, Rocks, Meteorites and Lunar Finds*. Butterworth-Heinemann, Oxford, xi + 139pp

Nigel T. Monaghan, Geological Section, Natural History Division, National Museum of Ireland, Kildare Street, Dublin 2, Ireland. 22nd February 1999.

Powell, J. and Denniss, A. 1998. *Holiday Geology Map: North York Moors*. British Geological Survey, Nottingham, A3 foldout. ISBN 0-85-272305-9. Price: £1-95.

Faced with the perennial problem of trying to fit a large amount of information into a small space, I find this guide, like the others in the series, very successful. Bright and attractive, it is likely to be one of those things picked up out of idle curiosity (you almost expect to see "Don't Panic" in large, friendly letters on the front). Once attracted, the browser will find a quality product which won't get screwed up on the car seat or soaked at the first hint of rain. He or she may find the relief takes a little sorting out, as is often the case with satellite images. Having done so, however, the relationship between the topography and the underlying rocks almost jumps out at you. The relatively few words with the key are quite sufficient to convey the geological story of the region. The language used is simple and straightforward, and this is continued on the reverse, where more background to the geology is given. Richard Bell's illustrations match the overall feel of the leaflet nicely. I have few quibbles. The place names are difficult to read, so it might not be easy to relate the map to a road map if you wanted to drive out and see some of these places. It would also have been nice to see a reference to some more detailed literature for those whose imagination has been fired. However, these should not detract from what is a considerable achievement. This is the kind of spark that could set off a lifelong interest in geology, and perhaps BGS might produce a presentation pack of all the guides when the series is complete.

Steve Thompson, Scunthorpe Museum and Art Gallery, Oswald Road, Scunthorpe, South Humberside DN15 7BD, U.K.

GEOLOGICAL CURATORS' GROUP

24th Annual General Meeting

27th November 1997 at the Department of Mineralogy, The Natural History Museum, London.

1. Apologies for absence

Received from Alistair Bowden, Paul Ensom, John Faithfull, Steve McLean, Andrew Newman and Rosemary Roden.

2. Minutes of the 23rd Annual General Meeting 1996

The minutes were approved as a true record of the meeting. They were approved on the "general aye" and signed by the Chairman.

3. Matters arising

Re the Editor's report, Steve Thompson asked if any papers were forthcoming from the Cambridge conference. Patrick Wyse Jackson replied that there were not.

4. Chairman's Report from John Nudds

This has been a mixed year for GCG. We have had some wonderful successes, but also some disappointments. As GCG Chairman I have evolved a double agenda; my first desire is to strengthen the links between GCG and its parent body, the Geological Society, and to this end I was delighted when asked in March to sit on a Geological Society Working Party to review Specialist Groups and Joint Associations. The outcome of this was very positive with a clear message from the Geol. Soc. that it values very highly its Specialist Groups and nowadays regards our meetings as its main business, since the demise of their more general meetings at Burlington House. The Society were very keen to improve relationships and made various suggestions, such as the issue of "starter packs" to incoming officers, and the provision of free facilities at Burlington House for meetings.

My disappointment here has been the handling of Geoscience '98 - the Geological Society conference to be held at Keele next April - designed to reunite the disparate specialisms under an umbrella conference. GCG's initial inclusion in one of the main symposia, on "Geology and Society - getting the message across", later transpired to be a passive one, and the high registration fees further guaranteed our exclusion. The latter would not have been such a problem, however, if more GCG members were also members of Geol. Soc. and I encourage all of you to ask whether you should be a member of our national professional body. As we currently stand, with so few Fellows amongst our membership, we hardly deserve to be affiliated to the Society.

My second aim has this year been fulfilled with tremendous success and that has been to take the Group "into Europe". I must say straight away that in this respect I am totally indebted to Steve McLean, who masterminded the visit. On

13th October, 19 members were woken at 5.15am by Steve, ready to board the Eurostar Express from Ashford International bound for Brussels. A truly memorable day included a visit to the Belgian Royal Institute of Natural Sciences where we saw the incredible Bernissart iguanodons, followed by a tour of the collections with the Head of Fossil Invertebrates, Dr Annie Dhondt, who was later enrolled as a member of the Group. After a good meal and a sampling of strange Belgian beers, we caught the train back to Ashford. GCG's tradition of sinking pints at the local pub was, however, thwarted by our accommodation at a Carmelite priory, and instead we sat round a room with mugs of hot chocolate, in Tom's words, "like residents of an old people's home"! The following day comprised a fascinating seminar at Maidstone Museum on Lost Worlds and the European Perspective, organised by Ed Jarzembowski and his team. I truly hope that this European adventure will continue and I encourage all of you to be a part of it. We have a lot to learn from Europe, but also a huge amount to give and collaboration can only be beneficial.

In this respect I must record my gratitude to GCG and the Geological Society for contributing towards my attendance at a European Science Foundation Workshop on Systematics, held in Hersonissos, Crete during October. The Workshop was held to formulate a programme for future funding by ESF for collaborative work on systematics and taxonomy. My role here for GCG was a dual one: first as the champion of the "Value and Valuation" cause, subsequent to the International Conference organised by GCG/BCG at The University of Manchester in 1995, I was emphasising the role of collections in future initiatives. My second objective was to investigate possible funding for collaborative projects to involve GCG and other European partners. A co-ordinating committee is developing a proposal for an ESF funded programme, and I have suggested to that committee that GCG is suitably placed to assist, for example, in surveying European palaeontological collections. [I should mention here that during 1997 the proceedings of the Manchester Conference were published by The Geological Society (*The value and valuation of natural science collections* (1997), edited by John Nudds & Charles Pettitt, 276pp.). Copies may be obtained by writing to me at Manchester University Museum.]

Apart from the European initiative, our other successful seminar during 1997 was the visit in April to Torquay where Mike Bishop hosted our meeting on Quaternary collections. Speakers were mostly drawn from Quaternary research and it was gratifying to see how our curatorial efforts on these collections had paid rich dividends in terms of research output. Our second day at the seaside included a fascinating tour of the well-known Kents Cavern by Professor Alan Straw and a trip to Berry Head led by Chris Proctor of Bristol University.

The disappointments on this front were first the poor GCG attendance at the BCG/GCG/SMA session during the MA Conference at Cardiff in September, which examined the role of the specialist curator. Only a handful of GCG members were present, which perhaps testified that we truly are an endangered species? Thanks to Steve Thompson for organising this meeting. An even greater disappointment was the cancellation of the seminar on disability, scheduled to take place in Hull in June, due again to lack of interest. Steve McLean has asked, in the last *Coprolite*, why this seminar was not successful. Please let Steve have your comments so that we can avoid a similar problem again. Thanks to Heather Rayfield, who had put a lot of hard work into this meeting, only to see it not come to fruition.

Support for museums and collections under threat saw satisfactory outcomes at Nottingham and Leicester, while the outcome at Bristol was nothing short of disastrous resulting in the loss of a geological curator's post and the redundancy of a GCG member. As a result of this your committee decided to review the way in which it responds to threats to collections. It is likely that in the future we will make representations to the Area Museum Councils and to the MGC as well as to the governing bodies of the collections under threat. This was reported in the recent edition of *Coprolite*.

I am indebted to numerous people for their efforts during the past year - to our secretaries, Mandy Edwards and John Crossling, for substantially reducing the paperwork that crosses the Chairman's desk; to Treasurer, Andy Newman, for keeping our accounts so healthy; to our editors, Patrick Wyse Jackson and Tom Sharpe, for another year of unbroken production of Journal and Newsletter, and to Tom also for his persistence and diplomacy in providing the Group with excellent new display boards, sponsored by Haley Sharpe Associates. I should also thank here Clinton Burhouse Ltd., for continued sponsorship of *Coprolite*.

Our outgoing Recorder, John Faithfull, should be thanked again for initially setting up the Group's Web pages, shortly to be updated by the new committee; we are also indebted to Tony Morgan and Wendy Simkiss who act as GCG's representatives on the Geological Society's Geoconservation Commission and the Natural Science Conservation Group respectively. Steve McLean I have already mentioned, but he deserves thanks also for the huge amount of time dedicated to organising all of our meetings this year, and finally I thank members of the committee, including cooptees and corresponding members, all of whom played vital roles.

Di Hawkes asked about our role within the Geological Society and stated that she would not like to see disaffiliation. John Nudds agreed and said that he hoped more GCG members would join the Geological Society. He said that GCG would try to have a presence at the next Geological Society symposium. The Chairman went on to comment on the poor attendances at recent GCG meetings and added that the Hull meeting was not the first to be cancelled.

The acceptance of the report was proposed by Steve

Thompson and seconded by Tony Morgan. It was carried unanimously.

5. Secretary's Report from Mandy Edwards

The Committee have met three times in 1997. We met at the Geological Society in January and at the Manchester Museum in May and October. This has been the first full year with two newly created officer posts of Programme Secretary and Editor of *Coprolite*. The meetings programme for 1997 was well organised and for the most part successful, with the highlight of the year being our highly enjoyable visit to Brussels. The Programme Secretary's role is important to the Group and one which takes up a lot of time, and I would like to thank Steve McLean for his hard work in this post. The publication dates for *Coprolite* have been slightly altered to fit in more closely with Committee meetings and so that Committee details can be published quickly to keep members well informed.

The Terminology Working Party are very close to publishing their guidelines and are looking at the best way to distribute the information either on paper or electronically, perhaps on the GCG web site. John Faithful, our Recorder, and the person behind setting up the Web pages, has decided to resign. I would like to thank him for the hard work he did setting up the web pages. The Committee are in the process of updating these pages. If any member of the Group would like to help with this project their help would be gratefully received.

Corresponding members to Committee include representatives from the Biological Curators' Group, the Geoconservation Commission, and the Natural Sciences Conservation Group. We regularly hear from BGC thanks to Steve Thompson who supplies reports of BCG Committee meetings. GCG has been involved with the publication of BCG' Collections at Risk Action Pack, and we will carry on this link in the future. Tony Morgan represents GCG on the Geoconservation Commission of the Geological Society. GCG will be holding some joint seminars with the GC next year and we will be included in their publication of "Who's Who in Geoconservation in Britain".

For next year Committee will be looking at a review and possible update of the "State and Status Report", which the new Recorder will start on. We hope to improve communications within the Group and further afield with publications on Terminology, updated Web pages, liaison with other groups which will be reflected in our seminar programme, and looking at specific training courses for our members.

The GCG Display Boards are now a reality and in 1998 the Committee intend to make good use of the boards and to make sure that they are available to travel around the country publicising the Group.

Thumbs-Up leaflets are still being requested. The stock of these is held in Manchester. Please contact me if you require

any extra copies. Colin Reid and Wendy Simkiss complete their two year term on Committee and I would like to thank them for their input over this time.

The acceptance of the report was proposed by Steve Thompson and seconded by Peter Tandy. It was carried unanimously.

6. Programme Secretary' Report from Steve McLean

Summary of GCG Seminars and Field trips since November 1996

- 27-28th November 1996. GCG Seminar and Field Trip: Geological models. Manchester Museum. Field trip to Alderley Edge copper mines.

Thanks to John Nudds for organising this very successful and well attended seminar and to all the speakers who provided excellent insights into the subject of geological models.

- 16-17th April 1997. GCG Seminar and Field trip: Quaternary Collections. Field trip to Kent's Cavern and Berry Head.

This seminar was attended by about 20 GCG members and included lectures from both a geological and archaeological perspective. Grateful thanks to Mike Bishop at Torquay Museum, Professor Alan Straw who led the trip to Kent's Cavern and to Chris Proctor for leading the trip to Berry Head. Of course my sincere thanks to all the speakers who gave such interesting and informative talks.

- 26th June 1997. GCG Seminar and Field Trip: Disability and Geological Displays. Hull and East Riding Museum: CANCELLED.

Unfortunately cancelled due to a lack of attendance. Nevertheless, my grateful thanks to Heather Rayfield for organised what certainly promised to be an excellent seminar and field trip and my thanks to all the speakers who were very understanding about the cancellation. If anyone has any comments about why this seminar was not a success please let me know.

- 15-21st September 1997. Museums Association 103rd Annual Conference. Joint GCG/BCG/SMA Session on "The Demise of the Specialist Curator".

Thanks should go to Steve Thompson who did all the organisation for this session and to the speakers.

- 13-14th October 1997. GCG Seminar and Study Visit. Lost Worlds, Iguanodons and the European Perspective. Visit to the Royal Belgian Institute of Natural Sciences, Brussels. Seminar at Maidstone Museum, Kent.

GCG's first visit outside GB (and Ireland) was a great success. A group of 19 members took the Eurostar train to Brussels on 13th October to be met at the museum by Annie Dhondt (Curator of Invertebrate Palaeontology). Annie showed us the splendid Bernissart Iguanodons and took us for an extended tour behind the scenes at the museum. My sincere thanks to Annie Dhondt and Pierre Bultynck at the

museum for organising such a splendid day. Also, I would like to record my thanks to Simon Hawkins and Stella Bellam of Kent County Council. Simon helped to organise the transport and Stella guided us around Brussels with great accuracy. The day would certainly not have been the success it was without their help.

Thanks to Ed Jarzembowski at Maidstone Museum for helping to organise the seminar and for providing such excellent facilities. The seminar was very well attended and again my thanks to all the speakers, especially Dr Dave Martill who stepped in at short notice to fill the gap in the programme left after the sad death of Alan Charig.

The programme next year promises to be equally successful, with visits to Belfast, Cornwall, Manchester and Nottingham. Plans are also underway to organise a weekend study visit to Paris.

Steve Thompson added that Janet Owen of the Leicester University Museum Studies course had helped him organise the session at the Museums Association conference and also deserved thanks. With this addition the acceptance of the report was proposed by Steve Tunnicliff and seconded by Colin Reid. It was carried unanimously.

7. Treasurer's Report from Andrew Newman

Financial Report

The accounts for the period 27/11/96-27/11/97 are attached.

The Geological Curators' Group has financial assets of £13429.71. Subscription income has been reasonable over the year; however, if any member still has to pay for 1997 please do so as soon as possible. It is important to thank the Geological Society for help in reclaiming VAT. The 1997 figure for Geological Curator represents two issues while the smaller figure for 1996 represents one. An invoice for £679.00 for the latest issue of *Coprolite* has just been received and is not included in these accounts. The meetings costs include an element for the overseas trip that broke even. I am pleased to note that the cost of running the Committee remains limited. If the invoice for *Coprolite* is included the Group made a small surplus over the year.

Membership Report

The totals for the Group now are

UK personal	293
UK institutions	93
Overseas personal	65
Overseas institutions	57
Complimentary	9

This represents a loss of 1 subscription since last year.

The acceptance of the report was proposed by Tom Sharpe and seconded by Mandy Edwards. It was carried unanimously.

8. Journal Editor's Report from Patrick Wyse Jackson

Two issues of *The Geological Curator* will be published this year: Volume 6, Part 7 (issued April 1997) and Volume 6, Part 8 (to be issued late November 1997).

Between them they contain eight papers, three Lost and Found items, the report of the 22nd AGM, the report of the award of the Brighton Medal to Bob King, and reviews of six books.

I received nine papers this year for consideration for publication this year, the same as last year. Four of these have been published, while the rest are in the middle of the review or revision process.

Patrick Wyse Jackson expressed concern that the number of papers be submitted was decreasing, and that he would welcome some new ideas to generate papers.

The acceptance of the report was proposed by Tom Sharpe and seconded by Andrew Clark. It was carried unanimously.

9. Newsletter Editor's Report from Tom Sharpe

Tom Sharpe reported that *Coprolite* was originally an interim measure but was now in its 25th issue. He made a plea for more copy. Tom thanked Monica Price for her work on the production of *Coprolite*, and Clinton Burhouse for their sponsorship. The subscription forms for 1998 will appear in the next issue which is due out in March. Tom was asked why institutional members were not included in the list of members.

The acceptance of the report was proposed by Colin Reid and seconded by Steve Thompson. It was carried unanimously.

10. Recorder's Report

There was no report.

11. Election of Officers and Committee for 1998

With the exception of the Recorders post, the Chairman suggested that the Committee should be re-elected en bloc. This was seconded by Paul Clasby and approved on the "general aye".

The Committee nominated Glenys Wass for the Recorders post, and this was seconded by Bob Symes and approved on the "general aye".

This left three further vacancies on Committee; there were no volunteers from the floor and the Chairman stated that the Committee will elect new members at the next meeting in January, and that the co-optees and corresponding members would also be elected at the same meeting.

12. Nomination of Auditors

Ken Sedman and Peter Davies, the auditors from last year,

were willing to continue. The acceptance of this offer was proposed by Patrick Wyse Jackson and seconded by Steve Thompson. It was carried unanimously.

13. Any other business

Bob Symes reported on contacts between the Geologists' Association and local groups in an attempt to see how the G.A. could help them, possibly through volunteers or the Curry Fund. They would also like to talk with the G.C.G. John Nudds reported that he had had a letter from Eric Robinson offering the help of the G.A.

It was reported that Paul Davis had been appointed a peripatetic curator for Surrey. The post was funded by Lottery money based on a bid by a consortium of museums.

The old G.C.G. display panels are currently in Cambridge - can they be disposed of? The Chairman said that this would be decided at the next Committee meeting.

Kenneth James reminded members of the forthcoming Geotourism Conference to be held in Belfast in April 1998.

14. Date and venue of the next AGM

This will be part of a two day meeting in Nottingham on the theme of "Little and Large". One day will be spent at Wollaton Hall with the A.G.M. being held that afternoon, and the second day will consist of a visit to the British Geological Survey at Keyworth. The date has yet to be confirmed but is likely to be during the first week of December 1998.

The Chairman then closed the meeting wishing the members a Happy Christmas.

Annual Accounts 1997 (27th November 1996 - 27th November 1997)

	1997	1996
Treasurers Account Income		
Subscriptions	4267.55	4283.00
Sale of backnumbers	182.00	13.00
Advertisements/Sponsorship	-	2000.00
Meetings fees	1845.70	272.00
Misc income (interest & VAT)	503.04	-
Transfer from deposit account	-	2550.00
Balance on 27/11/96	<u>12647.84</u>	<u>1291.60</u>
Closure of Premier Interest account		
Transfer on 3/9/96		9298.86
Interest 3/9/96-27/11/97		55.39
		9354.25
	<u>19446.13</u>	<u>19764.05</u>

	1997	1996
Treasurers Account Expenditure		
<i>Geological Curator</i>		
Printing	2482.58	1232.07
<i>Meetings</i>		
Committee	173.63	379.46
General	2054.21	540.68
<i>Coprolite</i>		
Print and distribute	1189.00	1954.00
<i>Leaflet</i>	-	3000.00
<i>Other expenditure</i>		
Misc.	114.00	-
Bank Charge	20.00	10.00
Balance on 27/11/97	<u>13412.71</u>	<u>12647.84</u>
	<u>19446.13</u>	<u>19764.05</u>

A.G. Brighton Funds held in Treasurers Account

Balance on 29/11/96	1558.43
Income (1997)	45.20
Balance on 29/11/97	<u>1603.63</u>

1996/97 Total Surplus/Deficit

Total Income	6798.29	6853.85
Total Expenditure	6033.42	7116.21
	<u>764.87</u>	<u>(262.36)</u>

[signed] A. Newman *GCG Treasurer*

[signed] P.S. Davis and K. Sedman *Auditors*

THE GEOLOGICAL CURATOR

Publication scheme

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

Notes to authors

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