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THE GEOLOGICAL CURATOR

VOLUME 4 No. 1 ISSUE 1 FOR 1984

Di faces a mammoth tusk!

DIANA SMITH, GEOLOGIST AT NORWICH CASTLE MUSEUM, APPLIES PVA EMULSION TO A GIGANTIC MAMMOTH TUSK DISCOVERED IN A GRAVEL PIT AT LYNG.

(Reproduced by courtesy of Eastern Counties Newspapers)

THE GEOLOGICAL CURATOR

SUBMISSION OF MSS

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

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

THE GEOLOGICAL CURATOR

VOLUME 4, No. 1.

CONTENTS

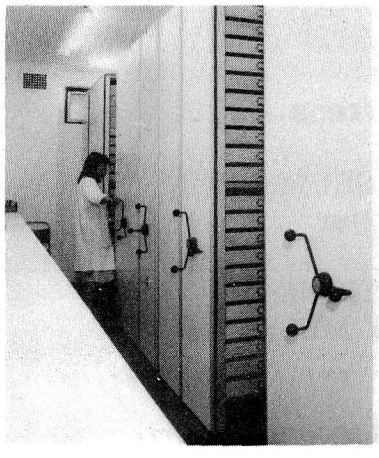
I am painfully aware that this, the first issue of the Geol. Curator for 1984, is very late. I must apologize for this but it is symptomatic of a number of factors (some personal) which have meant that it has now become impossible for me to continue as editor and I will regretfully have to resign as from the end of this year. I particularly regret that the new editor will inherit the burden of a backlog of two issues instead of starting with a clean sheet.

I would like to pay tribute to the tremendous support I have received over the last four years both from the membership of the Group and especially the Committee who have guided and advised me patiently, wisely and kindly. I would particularly thank Hugh Torrens for his seemingly inexhaustable enthusiasm and fund of knowledge in compiling Lost and Found and for supplying a multitude of other interesting items for copy. I am also grateful to Tony Cross for compiling Notes and News, Ron Cleevely for co-ordinating the information series on collection labels and Ken Sedman for undertaking the distribution of the Geological Curator.

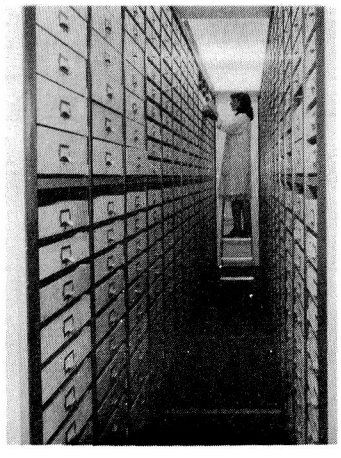
Finally I thank the many contributors who have submitted a seemingly never ending stream of diverse articles, letters and ideas which have made my job one of tremendous interest. I wish my successor Pete Crowther every success and hope he will enjoy the job as much as I have done.

Tim Pettigrew.

Hand Crank Mobile Shelving In The Geology Department, The National Museum of Wales, Cardiff



View of operating ends.



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THE NEXT TEN YEARS

by P. S. Doughty

A transcription of an address given at the Ludlow meeting of the Group on Friday 8th June, 1984.

It is not a bad idea for any organization to examine itself periodically simply to scrutinize its performance against what it has set itself to do: to see whether it has achieved all, some or none of its objectives and whether it is still moving broadly in the right direction.

The Geological Curators' Group has now been in existence for ten years, which is the kind of anniversary when we might be excused for taking stock and setting sights for the next decade.

G. C. G. has a strong corporate identify and our activities and achievements are spread widely across our membership. No single view is therefore likely to reflect our opinions about where we are now, and where we should be by 1994. To reflect a wider viewpoint my background examination (research would be too grand a word) for this paper consisted of writing to a handful of strongly opinionated and vociferous activists within the Group soliciting opinions and it was on the resultant letters that this, my very personal interpretation, was formed.

Almost everyone considers that our achievements to date far outstripped our expectations when the Group was formed in 1974, some waxing quite lyrical about our blue remembered hills. All I would remind colleagues of is Houseman's line later in the same stanza, because our early perambulations are "The happy highways where (we) went and cannot go again". It is too easy to luxuriate in our achievements when we should be moving on. If it is slogans we are looking for then we are perhaps closer to the world of entertainment where it is clearly understood that you are only as good as your last or next show. It is what we are doing now, and what we intend to do next that is important.

The intention in this paper is to:-

i. State what we set out to do.
ii. Assess how much of it we have achieved.
iii. Examine some things we might have done, but didn't.
iv. Present the views of some of our strongly opinionated members.
v. Invite comment from the membership, particularly those who were not at the Ludlow meeting.

Any comments that emerge from this process will be taken to Committee and, we hope, result in a consensus view of our future work, development and meeting programme.

CONSTITUTIONAL OBJECTIVES

Our principal objectives are clearly stated in the constitution and here attainment against intention is examined briefly.

1. The holding of meetings to promote the exchange of information.

The Ludlow meeting was the 39th formal meeting of the Group in ten years and the themes during that time have ranged widely, from such things as "The Story of the Earth" exhibition to mineralogical terminology in documentation: from pyrite decay to "Geology for sale": replication of fossil vertebrates to standards of curation. The meeting programme has been popular, lively, stimulating and well attended. We have more offers to stage meetings than we have dates available and rather than exhausting topics those offered become more relevant and attractive as time progresses. There has been no serious criticism of the form, content and frequency of our meetings and I think we can claim a high measure of achievement on this objective.

2. The provision of information and advice on all matters relating to geology.

In practice I am not sure what this means. If it means that we answer all enquiries that we receive then we can claim a complete service. There are few of them and they are serviced promptly. If, on the other hand, it means that we should keep all our members informed on what is going on in the small world of geological curation then that is what our publication the Geological Curator is intended to do and most of us take a great pride in it as a special breakthrough in museum publication, although equally almost all of us have views about its future development.

If however, the second objective means that we should be provoking people to ask our advice on matters geological, particularly relating to collections, we can claim no more than a start.

Our success in relation to this objective is difficult to quantify but we can claim substantial progress.

3. The surveillance of geological specimens and information with a view to ensuring their wellbeing.

This is a key issue discussed more fully later, but a substantial effort has gone into the investigation of collections, the identification of collections requiring support and the formulation of grand policy. In terms of impact measured as collections rescued, rehabilitated, rehoused and restored to full professional use we must honestly admit that our effectiveness has been minimal, but there are notable successes and still a large range of policy options open for investigation.

4. The preparation of a code of practice for the curation and deployment of collections.

In the order of priorities this project has been reached only within the last two years. The Museum Association's proposed Manual of Curatorship looked at one stage as if it might meet this requirement, but it now takes the form of a series of long essays with substantial bibliographies and is not the authoritative handbook of method and routine required to meet this objective. The preparation of such a work establishing for the first time the principles and practice of geology in the museum context is no light undertaking but 3 of our members have agreed to prepare their own contributions and to edit input from a wider circle of curators. The product, to be called Guidelines for the curation of geological materials, is expected to appear later this year. With its publication this objective will be substantially met.

5. The advancement of the documentation and conservation of geological sites.

The relevance of this objective has always been contentious but it was an aspect of geology that the Geological Society of London wished to see included in our work at the time of our affiliation. A number of stalwart members of the Group took it on perhaps more as a duty than a joy, but it was thoroughly done and the scheme in all its logistic detail now exists and is operational at national level. More could not have been achieved on this front.

There is a sixth objective relating to the conducting of surveys, but rationally they can only tools in the preparation of factual background for our major policy targets. Certainly one major survey has been conducted and published in direct support of our third objective.

It can be justly claimed that both the spirit and the substance which marked the Group at its inception has survived and all its aims have been energetically pursued. Our achievements in the first ten years have been substantial but it should be remembered that when one starts from nothing, achievement is easy and obvious, nor should we make the mistake of assuming that all objectives are of equal weight and significance. It is obvious to all of us now that our third objective lies at the heart of our profession, yet it is the one causing us most concern and which appears least susceptible to movement even after the investment of a large amount of effort.

PERCEPTION

That then is broadly where we are now, viewed from within. But it is worth examining the Group from without because in that first decade museums and their professional physiology also changed in ways we seem to have influenced.

We were the first of this new generation of curatorial groups and within only a few years half a dozen others, all at the centres of their respective disciplines, rapidly emerged. There is now a powerbase in the profession with real curatorial authority. In this relatively short period this movement has changed the direction of curatorial thought in a permanent way.

Its existence has had a bearing on the Museums Association. Had the Association been prepared to reform itself along professional lines with professional representation in the early to middle seventies the groups might well have seen special opportunities that such an association could offer. In the events the chance was lost. But as essential areas of curatorial authority develop outside the formal structures of the Association, its relevance receives yet another dent and some of what it sees as its central role, such as education, becomes the subject of arrangement and accommodation.

The Group has a reasonable claim to being the motivation behind collection research units. From the outset there was a major pre-occupation with collections, their whereabouts and condition. Hugh Torrens more than any other individual developed and fuelled that movement through G. C. G. publications and meetings. It rapidly spread in the natural sciences to become a major driving force now formalized in the Federation for Natural Science Collection Research with which we share many common members.

Our publication, first the G. C. G. Newsletter, now retitled the Geological Curator, was an entirely novel development in museum literature and it has spawned a number of similar museological publications adapted to the particular needs of other areas of curatorial interest but so evidently inspired by ours.

In the wider geological community, and internationally in the field of museum geology, the Group has made an impact that has surprised almost all its members because it was not consciously considered or stated in 1974. If it had been an objective it would have been "The national and international promotion and elevation of geological curatorship within the general communities of geology and museums". This recognition has arisen incidentally as the result of the publishing activities of the Group which have more than doubled the available literature on geological curatorship in a decade, and the publications themselves have been significant and cited because they deal with issues central to the practice of geology in museums. In addition to the Geological Curator the Group has stimulated the following major works:- Curation of Palaeontological Collection, Special Papers in Palaeontology 22 of the Palaeontological Association; all the literature for the National Scheme for Geological Site Documentation including the Geological Record Centre Handbook, and the Geology Locality Card Instructions, Museums Documentation Association; The State and Status of Geology in U.K. Museums; Miscellaneous Paper 13 of the Geological Society of London; World Palaeontological Collections by Ron Cleevely, British Museum (N.H.) and Mansel; Geology in Museum: a bibliography and index by T. Sharpe; National Museum of Wales; and now the imminent Guidelines for the curation of geological materials to be published by the Geological Society of London. No other body has initiated such a substantial and sustained contribution in this field in its entire history.

POSSIBLES

The list of things we omitted to do, or did without conspicuous success, is about as long as our curatorial imagination allows. Some of the more obvious are listed simply to suggest the kinds of options still open.

1. There is still no agreed specification of detailed standards for the documentation of geological collections. The concept of a union catalogue for museum collections was mooted by the Museums Association in 1889. Its centenary falls in our second decade and it would be pleasant to mark it with an agreed standard in one subject at least.

2. There are still no museums developing common catalogues across technology and space.

3. We have not compiled user collection indexes for U.K. museums. If people want to know, for example, where the best Liassic ammonites, metalliferous ores, garnets, fossils from the Inferior Oolite etc., are, they have no ready means of discovering the information. Guides for professional use could be major adjuncts in the development of a national service utilizing, and justifying many of the significant, but neglected, collections in addition to the rest.

4. Curator development, which ought to be central to the activity of the profession is still peripheral. In formal museum education it occupies only a minor part of the study objectives. There are still too many small museums employing "general" curators when consortia or county-wide collaborations could generate large collections with the potential to develop specialist curation and professionalism. We could exert more pressure for balance in formal course objectives, assist and advise where we believe that collaboration might be useful, suggest to museums with larger departments that attachments and exchanges are almost professional obligations. Without education, and collections of wide diversity and potential we will not be preparing the maturity of judgement in new recruits to ensure the healthy developments of method and technique for future generations.

5. There are no directories of specialist and specialist curators in geology with the result that pressures continue on the British Museum (Natural History) whilst those who could benefit from seeing a wider range of material do not always have the opportunity. As well as improving and speeding service this is another means of curator development.

6. Mineralogy has not achieved the prominence in the Group's activities that many think it should have. Whilst there are relatively few mineralogists in the membership it remains true that only they can

devise and stimulate the activities in this field. The Committee is always open to suggestions and proposals.

7. Geological technology is not well served by any formal organization at the moment and over the last three years there have been a number of suggestions that technicians need a forum either of their own, or as part of another, wider, body. Museum technical staff have made major contributions in this field generally and their opinion is respected. As a group they are tending to resist the formation of a new body. G. C. G. has benefited enormously from the use of the Newsletter and Curator for the publication of a few highly significant papers in this field. Should the Group offer itself as a vehicle for technicians and if so how should we proceed with discussions?

THE MAIN ISSUES

My correspondence to prepare me for this paper, far from presenting a wide spread of opinion about what we might be attempting in the next ten years, tended to show a consensus around two issues which almost everyone believes should be our major objectives.

COLLECTIONS

Everyone agrees that we are overwhelmingly concerned with collections and their welfare, but there is a widespread anxiety that we have been sidetracked, perhaps not seriously, but sufficiently to make it worthwhile appraising our position. We have identified a large number of collections at risk and we have detailed the nature of the hazards involved, but what practical effect has that had? We have written to every offending authority, we have intervened in every case where immediate threats to major collections have been involved and we have been able to give practical assistance in a few places. We have certainly made owning authorities aware that there is a professional watchdog, but our general impact considering the size of the problem is puny. It appears that most of us feel that G. C. G. is not the kind of body to solve the problem, but the body to orchestrate all the agencies that together could cause significant movement. It is implied that the State and Status Report had been waved like a flag rather than wielded like a bludgeon.

The Committee needs views on the procedures we might adopt. We have yet to start in Parliament but it is only through the Commons that we can influence national policy in any real way. The Commission has received copies of the Report, but there is much more to be done there. The report on biological collections is imminent and is likely to reinforce the case powerfully. The Biological Curators Group and G. C. G. together could then perhaps have a new look at government agencies and determine an overall strategy.

The State and Status Report has been useful in stimulating discussion in Area Councils and at least three have taken, or are seriously contemplating, action. By far the most impressive move has been the employment of Mike Taylor, on contract, by the S. W. Area Council to examine the neglected collections in the region. From our point of view the exercise could not have been better selected or conducted. At the time of writing reports on 6 museums are completed, reports on a further 7 are pending, and work on three others is in process. Everyone involved seems to be impressed with the relevance, energy and achievement of the project and it is an obvious pointer to the future.

One member of the Group favours a Museums Inspectorate as a means of informing authorities of their obligations. Inspectors, however, would need a set of rules indicating the core of good practice. With the appearance of our Guidelines it would exist for geology at least and the whole proposal would then become feasible. Who would employ such inspectors and how they would be trained is not immediately evident, but the Commission or, as the immediate project capital providers, the Area Councils are obvious candidates. Recent thinking in some areas of the Civil Service favours peer assessment for highly specialized work with some general oversight as an alternative to inspection. This could have something to commend it in museums.

It is evident from all these comments that if the resources become available tomorrow to ease collection problems we would have no agreed starting point. There is no plan of action relating to collections waiting in the wings and perhaps we should be addressing ourselves to such a plan now. If, as a Group, we see this as our most important role we must establish our priorities quickly and formalise them into an intelligible scheme.

IMAGE

Related to the first issue, but different in kind, was the second widely agreed matter. There is no broad public awareness of geology and its heritage and members feel that developing an appreciation of the science and its material roots and treasures is worthwhile in itself, but essential if we are to pursuade an influential public to safeguard the heritage as a matter of course. It may be felt that such a grand task is beyond a small curatorial group, but to fellow geologists we are the shop window of our science and its principal popularizers and if we aren't, who is?

There are, however, several publics to reach and the means of interesting them are different.

a. Awareness among the general public.

At this level we are talking about education by entertainment in almost all cases and there are many ways in which that can be done.

Whizz-bang exhibitions are perhaps nearest to our traditional role, but to lift levels of awareness and reaction collaboration in the financing, staging and touring of a new generation of exhibitions designed for major impact would be essential. Themes such as "A hundred treasures from...", collectors "The fossil man" "Plotters of time" etc., finest display specimens with their stories, and something more innovative, perhaps tapping the rich reservoirs of the art of geology on an international level should be considered.

The quality of staging, literature and publicity assumes collaboration, collaboration would almost certainly require touring, which in turn would demand superior venues and security. Exhibitions of this kind should and would be nationally reviewed in thepopular press. A major effort of this kind, say quinquenially, could be an important geological focus. The first could be the bandwagon to carry part of our campaign.

Broadcasting particularly television, has an insatiable appetite for material and museums are full of it. The television technique required for museum based programmes is not yet satisfactory but it can, and will, be developed soon. Good ideas, well expressed in proposals and scripts are likely to meet with interest and there is no surer way to reach a mass audience than through radio and television. We have a great deal to offer, and equally a great deal to learn but if we are not prepared to learn it we can hardly blame others, who use our material, for not realizing its full potential.

The magazine as a vehicle has undergone a real rejuvenation with the development and spread of the colour supplement where again off-beat articles, well illustrated, are constantly sought by editors. How often have we seen popular science in them? The Arts have learned about Country Life, Tatler, Illustrated London News and periodicals of this genre, and are an essential element in every issue. We must do the same where we can. Magazines like BBC Wildlife and the about to be launched Geology Today are natural targets and perhaps we should have a concerted programme of creative popular geological writings to ensure good quality material regularly available to lift the interest of the public in the geological heritage.

There are all kinds of other ways, perhaps not achieving such large audiences, but organised on a widespread and continuing basis, reaching a large number of people none-the-less. I am thinking of tours, excursions, demonstrations, expositions, dramatizations, and a number of other routine things that with the injection of a little imagination could leave a popular public howling for more.

b. Awareness among politicians.

We have a Minister for the Arts, Lord Gowrie, who for the first time has said, though privately, that he really does not feel any interest in the sciences or any real responsibility for the scientific heritage. He confirms what many of us have believed for a long time, that Ministers for the Arts are exactly that, and their actions and commitments demonstrate it beyond doubt. The argument that says the original title was a semantic accident and that in reality the responsibility and commitment to other aspects of culture as represented in museums is a real one, does not bear serious scrutiny. If this pretence ended and a budget for popular science only half that of the Arts Council were available there would be a significant shift in the public perception of its national heritage and culture in a decade.

It is perhaps time some of the key questions were posed and our arguments put publicly. When we think science is having a raw deal, perhaps we should be saying so very loudly.

NERC and SERC have recently discovered common interests with museums and it is perhaps true to say that the collaborations so far have been more to their direct advantage than to ours. But if NERC, for example, are persuaded that publicly funded research collections of significance should be placed in secure publicly available repositories then the financial support for their proper housing and curation should follow, as it has for archaeological collections resulting from rescue activities. Perhaps we may then be able to pass to discussions on an integrated national plan for major collections with services to cover them in some way. The fate of the British Geological Survey Collections is so unclear at present that they too could be included.

Politicians are impressed by efficient use of available resources and museums could considerably improve their performance in this respect, but the structures of local government, in particular, make that difficult. If all the resources individually allocated to geology in museums could be rationally applied a great deal more could be achieved. One hesitates to enter into the GLC/Metropolitan Counties controversy but, undoubtedly, where museum rationalization has occured within them, available resources have gone much further. Perhaps the way forward is to propose consortia of authorities, to ensure sensible use of finance and then press through the Commission, the Area Councils, and the Local Authority representatives on the Council of the Museums Association to see what can be done.

An area where geology could truly benefit is in the acquisition of fine and outstanding material. The international dealerships handle spectacular specimens each year only a few of which find their way into public collections. Museum geologists have been conditioned into spending very little of their museums' purchase grants which in turn has led to low expectation, little financial demand, and the drafting of collecting policies which are dull and confined. If you want fine display minerals, any reasonable quality gemstones, unusual fossils or the truly spectacular then relatively large sums of money are needed. The Ulster Museum recently spent £100,000 on a dinosaur skeleton. When such acquisitions are as commonplace as even the regularly rescued old masters, geology will catch the headlines and feed an undoubted interest. Is anyone prepared to attempt a major purchase within the U.K. using the National Heritage Memorial Fund? Where is the equivalent of the National Arts Collection Fund? Surely for one of the major wealth generating sciences the benefiting industries would be prepared to prime the pump for something similar. No matter how distasteful some museum academics find the dealing in fine geological materials it is a long established, and on the whole, a reputable business. Some of the best collections gracing the finest of our museums were the product of close relationships between the wealthy connoisseur and the discerning dealer. Ignoring this trade has not made it go away and even if more museums become involved they are unlikely to stimulate it in a way adverse to the science.

c. Awareness among geologists

Despite a degree of success in this field there are still far too many professional geologists unaware or only vaguely aware of our existence and the role we perform. Our relationships with them should be more obvious, structured and secure. How can we achieve that? One obvious deficiency I see is the failure to teach taxonomy and the significance of typology and repository in basic university courses. Every new graduate should see the logical place of museums within his professional tool kit. How many times have post graduates discovered relevant museum material on their doorsteps when research is in the final stages of writing up or even after the viva. How can we ensure that researchers come to museums at the start of their work rather than late or almost as an afterthought? The initiative here is ours and we have not really made a serious start.

AFTERTHOUGHTS

If we ever reach that remote and carefully allocated chair in the office of the Minister's Parliamentary Private Secretary to make our case for threatened collections and he asked pointedly what all these collections were for, what would the reply be? It is likely that there would be no single opinion and that ultimately platitudes such as "to enhance the quality of life" or "because they have intrinsic worth" would stumble out. Ministers these days tend to be unmoved by such abstractions, certainly as they apply to science, and it is difficult to imagine secretariats bothering them with such a matter.

We need a collection philosophy for geology, and more we need it supported in detail and practice. It must be understood by us all, not merely as a justification for our professional survival but because we need to be able to articulate clearly those right-minded but often confused convictions we all have about our collections. In my view this is a high priority but need not detain us too long from the important goals.

Strong opinions on the development of the Geological Curator also figured prominently in my correspondence. There is a widely held view that the time has come for a better looking, more polished, presentation of our journal. The possibilities are under active examination already but the constraints, as in almost all these cases, are financial and directly related to our total membership, which determines our primary income. The possibilities of new classes or kinds of membership, such as geology technicians, are open for comment. There is also a belief that we need to incorporate some new ideas, that the Curator has settled into a predictable (though interesting) form too quickly. A journal can only be as good as its contributors so the purveyors of the comment have the remedy in their own hands. Our Editor welcomes all things novel and stimulating. Any proposals for enlivening the pages of the Curator and enhancing its appeal will be considered.

The final recurring theme relates to Site Documentation. Is it an unnecessary deviation from our main role or is it an important adjunct to curatorial performance? It obviously is not the curation of collections and thus it can be argued to be none of our professional business. But if it isn't our business whose is it? Nature Conservancy Council while interested have not undertaken the main effort and there are elements of the British Geological Survey who see it as largely irrelevant since their own work covers all sites and everything between them. Almost all important geological sites have yielded material and should therefore appear on a large number of specimen records. Unless museum collections are to be regarded as the mortuaries of our science they should serve as pointers for further research and interest and one obvious link to their original setting. Those sites are another important aspect of the geological heritage and the association with museum objects is certainly valid. The debate is a sterile one in any case because the scheme is now established and the documentation principles and formats and the Record Centres are established. The business of recording sites is not solely ours and as the scheme develops it may not even be mainly ours. We simply established the logistics. It is my belief that we have met our constitutional obligation in this field and we must keep faith with our members who spent the effort to see that we did.

TAILPIECE

We should never lose sight of our relatively small membership when planning for the future. If we are to perform well we can only select a few projects to carry through. If we are to be effective we have to ensure that those we do select are the right ones.

The sole intention of presenting these thoughts is to stimulate reactions. I look forward to the postbag.

LETTER TO THE EDITOR

Coincidence and the value of the Geological Curator.

Dear Editor,
I would like to relate an incident early in 1984 which illustrates the value of The Geological Curator and of curators who remain awake to its contents.

In January I wrote to The National Museum or Ireland asking for information about a brachiopod specimen in the Griffith Collection, used by M'Coy for his 1844 'Carboniferous Fossils of Ireland'. We had an old plaster cast of the specimen, so I knew an original should exist and that it should be considered as the type specimen of one of M'Coy's species. I was surprised, therefore, when Nigel Monaghan (of the Nat. Mus. Ireland) replied that the specimen could not be found.

Now it happened that at that time Nigel's article on the geological collections in the National Museum of Ireland had just been published in The Geological Curator (vol. 3, no. 9) and had been read by John Fryer, of the Geology Dept, King's College, London. Nigel's mention of the Griffith Collection had rung a bell with John because he had long wondered about a specimen in his care, borrowed years ago by somebody in King's College, but accompanied by no documentation other than the early museum label with "Presented by Sir R. Griffith Bart.", and a species name. John wrote of his discovery to Nigel who, three weeks after my enquiry, wrote to me with the information that the productid I wanted to see had turned up in the King's College collections!

A week or so later I was able to inspect the specimen and then pass it back to its rightful place in the Dublin collections.

This incident, with its happy ending, points up the dangers of inadequate or lost documentation when specimens are moved within or outside their museums, but also the importance of communication between curators, whether by published catalogues or through the pages of The Geological Curator.

Howard Brunton, Department of Palaeontology,
British Museum (Natural History) Cromwell Road.
London, SW7 5BD.

FORTHCOMING MEETINGS

Friday 7th December, 1984

THE STORAGE OF GEOLOGICAL MATERIAL and ANNUAL GENERAL MEETING

To be held in Department of Geology, National Museum of Wales, Cardiff.

An informal meeting to view recent storage developments at NMW, and to discuss some aspects of the storage of geological specimens. It is hoped that representatives of storage equipment suppliers will be present.

1030.	Coffee.	Welcome:	D. A. Bassett, Director, NMW. M. G. Bassett, Keeper of Geology, N. M. W.
1100.	Geological Storage:		Tour of stores and discussion, with contributions by S. R. Howe (NMW), M. F. Stanley (Derbyshire), D. Steward (Stoke) and R. G. Clements (Leicester University).
1245.	Buffet lunch provided by the National Museum of Wales.		
1415.	Open Forum:		Storage problems. Topics for discussion include storing research collections; large specimens; type collections; humidity-sensitive minerals; systematic organisation of collections; and clearing the stores - disposal of collections.
1515.	Tea.		
1545.	11th ANNUAL GENERAL MEETING.		

In order that we may know how many to expect for lunch, if you intend to come to this meeting please notify Tom Sharpe, Department of Geology, National Museum of Wales, Cardiff, CF1 3NP (Tel. 0222 397951 ext. 215) by Friday 23rd November, 1984.

THE CARE AND MAINTENANCE OF NATURAL HISTORY COLLECTIONS

The 2nd Workshop on the Care and Maintenance of Natural History Collections will be held at the Royal Ontario Museum in Toronto for two days during the period 21 - 25 May, 1985 (tentatively 21 - 22 May) in conjunction with the annual meeting of the Canadian Museums Association.

Plans for the Wrokshop include oral presentations and demonstrations, poster presentations, trade exhibits, and tours of the ROM's science collections and laboratories. Papers should cover such topics as collection, preservation, preparation, documentation, and storage of natural history specimens (botanical, geological, mineralogical, palaeontological or zoological).

Many opportunities exist for the exchange of scientific information through publications and meetings within individual disciplines. This Workshop is intended to provide an opportunity for those people who are directly concerned with the care of natural history collections to share ideas and discuss common problems in this often forgotten but essential aspect of natural sciences. The proceedings of the first Workshop, sponsored by the National Museum of Natural Science in Ottawa in May 1981, are published in Syllogeus 44, 1983. We plan to publish the proceedings of the 1985 Workshop.

If you are interested in receiving the second circular, please complete and return the attached form to:

Janet Waddington, Dept. of Invertebrate Palaeontology,
Royal Ontario Museum, 100 Queen's Park,
Toronto, Ontario, M5S 2C6. (416-978-3678)

PLEASE CIRCULATE THIS NOTICE TO YOUR COLLEAGUES.

10th ANNUAL GENERAL MEETING OF THE GEOLOGICAL CURATORS' GROUP AT WARWICKSHIRE MUSEUM, FRIDAY 9th DECEMBER, 1983.

Apologies received from John Nunney, Tony Cross, Ken Sedman, Geoff Stansfield, Mike Bishop, Bob King and Bob Owens.

Minutes Mick Stanley proposed that the Minutes of the last AGM be taken as read. This was seconded by Tristram Besterman, so they were signed by the Chairman.

Matters Arising

Geological Mining Museum - Sydney, the Committee wrote to the Geol. Surv. NSW. The reply from the manager/curator explained that the problem had eased slightly and that no other developments were known. More recently Geoff Tresise had received a letter from the museums education officer, who is visiting England in February 1984 and wishes to meet members of GCG and inform the Group of what is happening. Geoff had replied asking her to speak at the forthcoming meeting in Leicester.

Chairman's Report

I would like to open by thanking the Warwickshire Museums staff particularly Tristram Besterman, for their organisation and hospitality here today.

Guidelines for the Curation of Geological Material. This time last year the editorial subcommittee - Tristram Besterman, John Cooper and I, had 2 or 3 basic scripts for the Guidelines. Now we have most of the script in either draft or edited form. This comprises about 110 pages with another 25 on their way, some of which are appendices, references and an index. We hope that another two full editorial sessions will complete the job so that the script can be submitted during the spring of 1984. The Geological Society has expressed an interest in publishing the 'Guidelines' for us as a Miscellaneous Paper, but we are still in discussion over the format. We want this to be flexible, allowing for easy emendations and additions, but this does raise the problem of production. The contents arrangement has evolved during the year, as compared to that published in Geol. Cur. in June 1982. It now follows a more logical sequence from acquisition policies and field collecting via the documentation of material entering, moving within and leaving the museum, to considerations of specimen preparation and storage, of hazards met with in collections, to their uses as exhibition and scientific materials. For the progress made on this project I want to thank all contributors, but especially Tristram Besterman, and John Cooper for the considerable time and effort they have devoted to our 'Guidelines'.

A brief and congratulatory mention must be made for the publication this year of Ron Cleevely's World Palaeontological Collections and of Tom Sharpe's Bibliography, both of which will be of great use. Following our efforts with NERC last year to influence collectors in universities to curate their collections and, where appropriate, to offer them to suitable museums, this year NERC published a paper by Steve Tunnicliffe of I. G. S. expanding on this subject. The GCG assisted in the text of this paper, which is being sent to all applicants of NERC geological grants. We have been presented with copies for our use, which we hope to distribute to schools and colleges with geology departments.

Once again we must thank Robertson Research International for printing an extra 5,000 publicity leaflets free of charge. The initial 15,000 have been distributed and apart from helping to advertise the Group they do seem to have helped in membership recruitment; but I expect that Tom Sharpe will have something to say about that.

In November Geoff Tresise, Tim Pettigrew and I met with three representatives of the BCG to draft a reply to the governments proposal to abolish the G. L. C. and Metropolitan County Councils, in so far as it will probably adversely effect funding for museum services. In particular those of Tyne and Wear, Greater Manchester and of Merseyside are likely to suffer, but the natural science collections at the Horniman are also in question. Copies of our reply, with suggestions for the various regions, are to be sent to the Office for Arts and Libraries, some members of the House of Lords, the Museums Association, the involved Area Museums Services and others.

Finally I want to say how honoured I have felt to be Chairman of the GCG these last three years; I've got a lot out of it and, with the kindly supportive help of your committee, I think it is fair to say that GCG continues to progress and, in many fields, leads the way in curatorial matters. I say a 'thankyou' to the committee, which has always travelled to London for meetings for my benefit, for its work on keeping minutes, running the affairs of the Group, including its membership and finance, the difficult job of producing our journal and for many other tasks performed by individuals. The success of any society depends on its members and thankyou all for coming here today.

Secretary's Report

GCG meetings in 1983 consisted of 'Teaching Geology inside and outside the Museum' - a joint meeting with the Association of Teachers of Geology in Liverpool on 29th April; a 2-day demonstration workshop at the BM(NH) on 22/23 June; a meeting at Buxton Museum on 9 Sept. which was followed by the Group's first field day; and the AGM at Warwick on 9 Dec. A small group of members also attended a field trip to South Wales coastal sites on 20 Sept. In conjunction with the Mus. Ass. Conference in Swansea.

Meetings scheduled for 1984 include the Group's 10th Anniversary meeting to be held at Leicestershire Museum on Wed. 15 Feb.; the summer meeting to be held at Ludlow on 8/9 June will have the theme 'The Geological Heritage' and will again include a field day; the meeting on Friday 7 Sept, will be held at the Castle Museum, Norwich and the AGM will be held on Friday 7 Dec. at the National Museum of Wales.

1983 has seen the publication of important works by two Group officers, already mentioned in Chairmans Report. Members of the Group have also contributed to the Museums Association long awaited 'Manual of Curatorship' which will be published by Butterworths in 1984.

Three working parties set up by the Group have made an important contribution to the years activities. The Chairman, Editor, Tristram Besterman and John Cooper have continued to work on the 'Guidelines' which it is hoped will be published next year to complement the 'Manual'. The Secretary, Paul Ensom and Mick Stanley have represented the Group on a joint working party with BCG planning a curatorial course in Natural Sciences to be held at the Museum Studies Department of Leicester University, 30 April - 5 May 1984. The Chairman, Secretary and Editor also met with BCG representatives to draft a joint response to the Office of Arts and Libraries which accompanied the Government White Paper 'Streamlining the Cities'. Both Groups are seriously concerned at the potential effect on if local museum services of the metropolitan counties of Greater Manchester, Merseyside and Tyne & Wear are abolished.

GCG have corresponded with and advised three bodies attempting to set up temporary MSC-funded appointments in institutions with curated geological collections. Dudley Museum have now made such an appointment, and Wolverhampton Polytechnic still hope to do so. Proposals for a temporary curator of Natural History at the Grosvenor Museum, Chester have however, been abandoned. GCG and BCG representatives attended a meeting at the Grosvenor Museum. At this meeting it was agreed that natural history material of scientific or historic interest should be transferred on long-term loan to institutions where it would receive specialised curatorial care, allowing the residual collections left at the Grosvenor to be used for educational or display purposes. Bolton Museum, Manchester Museum, Merseyside Museum and National Museum of Wales were recommended as suitable repositories for selected material.

A most welcome development in 1983 has been the creation, by the Area Museums Council for the South West, of the post of geological conservator. This post initially established for a three-year period, is based at Bristol Museum but it is hoped that conservation work will be carried out for museums throughout the south west. We have written to directors of the other Area Museum Services commending this initiative. The Chairman and Secretary also submitted a report to the Museums and Galleries Commission pointing out the country-wide need for peripatetic curator/conservator posts of this type.

The Secretary prepared a report on the prospects facing the Geological Museum following the move of IGS to Keyworth. This report based on an earlier one prepared by Phil Doughty for the NCC, had been requested by the Mus. Ass. Council who subsequently adopted it as the Associations official policy document.

Finally I must pay tribute to my fellow officers and committee members for their infailing support throughout an unusually busy secretarial year.

Treasurer's Report

1. Membership

The membership drive launched at the beginning of the year with the production of the publicity leaflet has shown encouraging results; 70 new members joined the Group in 1983. (For comparison - 11 new members joined in 1982 and 17 in 1981). Two members resigned this year and 12 were removed from the membership list for non-payment of subscriptions from 1982. Therefore, the net increase in membership is 56. Membership now totals 331 (including 1 Honorary); in addition 15 complimentary and exchange copies of The Geological Curator are distributed. A full membership list will be published with Vol. 4/1 of of Geol. Cur.

2. Accounts

The accounts for the period 19.11.1982 - 17.11.1983 are appended.

Income: the increase in membership, in addition to increasing the subscription, income had also had a considerable effect on the sale of back numbers of the Geol. Cur. which this year brought in £512.82, compared with £66.25 in 1982. Advertisement income was £42 (there was none in 1982) and £105.30 is still owed to us by advertisers.

Total income for 1983 (current account + deposit account) = £2921.80. compared with £1567.93 in 1982.

Expenditure: the major items of expenditure were, as usual the production and postage of the Geol. Cur., which totalled £2439.98, in 1983. For the first time since 1979 the Inland Revenue has charged Corporation Tax amounting to £24.36 on our deposit account interest for 1982: I am currently exploring possible ways of avoiding this tax.

Total expenditure for 1983 is £2589.38 compared with £1761.36 in 1982.

Therefore the surplus of income over expenditure for 1983 = £332.42.

The total cash in the bank at the moment, to be carried forward into 1984 is £974.07. However, when the amount owed to the Group (343.85) and our imminent debts and 1983 debts payable in 1984 (about '35) are taken into account, about £482 (of which £99 are advance subscriptions) will be carried forward to next year.

Estimates of income and expenditure for the forthcoming year indicate that there will be no such surplus at the end of 1984. To keep subscriptions to a minimum, members can assist by:

1. bringing their subscriptions up to date if they have not paid for 1983.
2. prompt payment of 1984 subs.
3. encouraging potential members to join, particularly institutions.
4. encouraging potential advertisers to take space in the journal; if you know of any company which may advertise with us please contact Di Smith at Norwich Castle Museum.

Thanks are due to Bob Owens and Steve Howe for their audit of the accounts.

Editor's Report

Three issues of the Geological Curator were published in 1983. The last issue for this year and the last of volume 3 (No. 9) is in press and will be issued in January 1984.

Volume 4 No. 1 will see a change in layout which it is hoped will improve the appearance of the journal. The camera-ready copy will be typed on A3 paper in a double column format which the printers will then reduce to A4. An Executive IBM typewriter will be used for the typing which should solve the recurring problem of poor quality print on some pages. The changes will also mean that we can include more material in each issue without a corresponding increase in cost.

During the year we have had a very disappointing response to the register of collectors labels. This, I feel may be partially our fault for the rather poor reproductions of the initial sheets. In future the sheets will be reproduced inside the journal as the centre page. There will then be an option for the sheets to be retained in the journal or removed and filed separately.

I am most grateful for those who have actively contributed items during the last year or who have assisted in other ways by acting as referees etc. I am also grateful to my colleagues on the committee for their support. I would particularly like to thank Ken Sedman who undertakes the arduous task of distribution of the Geol. Cur.

Finally I would make a plea to the membership to contribute to the Geol. Cur. either by submitting articles or by writing letters. Please tell us if there are criticisms of the journal. Feedback of this kind is most useful in formulating future policy.

Recorder's Report

The year has partly been spent examining the role of the Recorder post on GCG Committee now that the large scale information gathering exercises of Phil Doughty and Ron Cleevely are complete. It did at first seem that the post might be superfluous, especially as the work of Collections Research Units became more advanced. However, if situations like that in Chester can suddenly be thrust upon us it may be prudent to retain the post with, perhaps, an understood broadening of its role - to include general collections liaison. The purpose would be, in part, to try and divine where potential 'Chester type' situations might occur and defuse them before they happen. Additionally, having defined many places where curatorial help and advice would be desirable (and accepted) it is perhaps time that we accepted to orchestrate some positive action in this direction. Committee was especially glad to hear of the peripatetic geological conservator appointed by the S.W. Area Service which is to be congratulated for accepting that an Area Service could provide curatorial expertise as well as the more technical services.

In order to improve GCG's information gathering capability I have suggested the establishment of an interactive network of collections 'watchdogs' throughout the country. The Recorder would co-ordinate their efforts by letter and telephone, relaying any information to Committee as received. One person from each Collections Research Unit area would offer a minimal countrywide cover. Mike Taylor (Perth) has been 'persuaded' to keep his ear to the ground regarding problems with any Scottish collections and Tristram Besterman (Warwick) has agreed to do the same in the Midlands. I am on the lookout for volunteers to act as the Committee's eyes and ears in the rest of the country. Any GCG member who heard of a collection in dire straits would, hopefully, contact the Committee anyway. I am merely suggesting a more regularised communication network, which may save time if its establishment is publicised throughout the profession and remains reasonably constant.

During the year I have represented the Group at meetings of FENSCORE, The Mus. Ass. Working Party on Collections and at a meeting regarding Chester Museum collection.

The recently scheduled FENSCORE meeting was deferred but a pilot study for a type specimen recording scheme has been successfully completed. Type specimen recording will form the next phase of work by the Collections Research Units and efforts are being made to establish referees who will examine and categorise possible type specimen records turned up by the C.R.U's.

The last meeting of the Mus. Ass. Working Party, which I was unfortunately not able to attend, afforded an apportunity to meet Dr. Bernice Williams who has been appointed for one year as a collections investigator. Based at the National Museum of Wales, she will effectively do for biological collections what Phil Doughty did for geology, and presumably she will also produce a report along the lines of the 'State and Status' document. When this is complete we must be ready to participate in another propaganda exercise, this time in conjunction with BCG in order to achieve maximum publicity regarding the state of much of the nations natural science collections.

Election of Officers

In the absence of alternative nominations the following officers and committee members were declared elected;

Chairman	Phil Doughty	Ulster Museum
Secretary	Geoff Tresise	Merseyside Mus.
Treasurer/Membership	Tom Sharpe	National Museum of Wales
Editor	Tim Pettigrew	Sunderland Museum
Recorder	Alan Howell	Bolton Museum
Minutes Secretary	Diana Smith	Castle Museum, Norwich
New Committee Members	T. Besterman	Warwickshire Mus.
	Paul Ensom	Dorset County Mus.
Continuing Committee members	John Cooper	Booth Museum, Brighton.
	Mick Stanley	Derbyshire Mus. Service.

Phil Doughty then took the Chair thanking Howard Brunton.

A.O.B.

Mick Stanley reported about the recent launch for a National Stone Centre. Unfortunately the meeting received little press coverage, though 25 specialised journalists were present and others had been sent information. Howard Brunton had been asked to write to the Charity Commissioners supporting the aims of the Centre as there was concern that the word 'National' in the name may be unacceptable. Howard had put off writing till this meeting in order to see if GCG members had any strong feelings about the name. The feeling of members was of whole hearted support. A leaflet has been produced and an enthusiastic promotions committee set up.

Appointment of auditors - Tom Sharpe proposed, seconded Tristram Besterman, that Bob Owens and Steve Howe be re-appointed auditors for 1984. This was accepted.

Committee for Geological Site Documentation (CGSD) - Mike Stanley reported that record centres will shortly be receiving a questionnaire which will form the basis of the annual report 1983/4 and he asked if the forms could be returned as soon as possible.

Geological Conservation meeting held in 1979 - Mick Stanley reported that the proceedings will be produced in spring 1984.

Roy Clements asked if members had been informed of the recent changes to the CGSD, in that GCG is now represented on the Geol. Soc. Conservation Committee. Roy was also concerned that a CGSD report was not included on the agenda for the AGM. He felt that GCG has been neglecting this subcommittee, and that reports from it should be made at future AGM's.

There being no other business the meeting closed at 4.50pm.

LOST AND FOUND

compiled by Hugh S. Torrens

From the next issue of the Geological Curator these columns will be the joint production of two co-ordinators.

M.D. Crane
Dept. of Geology,
City Museum
Queens Road,
Bristol,
BS8 1RL.
Tel: 0272 299771.

and

H.S. Torrens,
Dept. of Geology,
The University,
Keele,
Staffs, ST5 5BG.
Tel: 0782-621111
ext. 493.

Please send material for future issues to the first named from now on.

Our note in vol. 3. no. 8. about postage costs brought an anonymous donation which we here very gratefully acknowledge, as much for the donation as for the observation that the LOST and FOUND columns were "one of the most interesting and useful services performed by the G. C. G." We hope this service will improve thanks to Mike Crane's involvement.

1. ITEMS AND INFORMATION SOUGHT

142. North Wales Upper Cambrian and Tremadoc fossils.

Stephen Jusypiw would be very interested hear of any collections, however small, of Upper Cambrian and Tremadoc fossils from the Porthmadog-Criccieth district of North Wales (whether trilobites, graptolites, gastropods, brachiopods, hyoliths etc.), particularly material collected in the late nineteenth or early twentieth centuries. Any information on collections of Tremadoc fossils from other areas of North Wales would also be welcomed.

S.I. Jusypiw,
Geological Conservation Review Unit,
Nature Conservancy Council,
Pearl House,
Bartholomew Street,
Newbury,
Berkshire,
RG14 5LS.

143. Smith, R. T. (c. 1870's)

Mr. Smith in a single advertisement in Hardwickes Science Gossip for 1876 (vol. 12 p.xii) described himself as a geologist and naturalist of Weymouth (25 St. Albans Street). At this time he was offering microscope slides of diatomaceous ooze (1590 fathoms), Atlantic soundings (422 fathoms) and marine algae (30 varieties) from the "Challenger" expedition.

I would be most interested to hear from anyone who possesses these or other commercial slides of the expedition and to gain more details of Mr. Smith.

Dr. P. Lingwood,
8 Sorrento Way,
Darfield,
Barnsley,
S. Yorkshire. S73 9RN.
(See Found section no. 143)

144. Cheetham J. (c. 1870s)

J. Cheetham was a dealer in geological specimens whose business was situated at 16 Northern Bazaar, 243 Pentonville Road, Clerkenwell, London. Advertisements in Hardwickes Science Gossip (1876, Vol. 12, p.xii) suggest that he specialised in fossils and semi-precious stones and that during the early part of 1876 he intended retiring and wanted to sell off his stock cheaply. It would appear from advertisements in 1877 that his acquisition of Admiral Sir Edward Belcher's (1790-1877) (See Lost and Found no. 96) collection may have delayed that intention.

I would appreciate any further details of Mr. Cheetham and of the Belcher, geological collection.

Dr. P. Lingwood,
8 Sorrento Way,
Darfield,
Barnsley,
S. Yorkshire. S73 9RN

145. Aurochs Skulls from Cumbria.

Skulls of Aurochs (Bos primigenius) that at one time hung in the castles at Howgill and Appleby in Cumbria have been lost and may now be outside the county. If by sale or gift they have become transferred to other museum collections or to private hands it would be of considerable value to have this information.

Details please to the undersigned who would be glad to pass on all the local information available.

J.T. Page,
Lowther Outdoor Activities Centre,
Forge Cottage,
Askham,
Penrith,
Cumbria.
CA10 2PF.

146. Wolfenden, E. Brian.

We would be interested to have any information on the present location of the 2000 Lower Carboniferous fossils collected by Wolfenden from Treak Cliff, Castleton, Derbyshire. They include trilobites, goniatites, brachiopods, corals, etc., and are generally cited in Wolfenden (1958), Paleoecology of the Carboniferous reef complex and shelf limestones in northwest Derbyshire, England. Bull. Geol. Soc. Amer., 69, 871-898.

John Tilsley,
2 Carr Houses,
Mayfield Road,
Sheffield 10,

Tim Riley,
Sheffield City Museums,
Weston Park,
Sheffield S10 2TP.
Tel: 27226.

147. Tuttle, Hudson (1836-1910)

Hudson Tuttle was an American spiritualist whose geological publications appear to have been limited to his most popular book The Arcana of Nature; or the History and Laws of Creation.

This attempts to prove, through describing the palaeontology of successive geological periods that all matter, whether physical or spiritual, is governed by the same laws and that man is the ultimate creation. It was originally "written" by Tuttle, directed by spirits, in 1853 and first published in 1860. It appeared in at least six editions. The book appears to have been the spiritualist answer to Hugh Miller (Footprints of the creator, Old Red Sandstone, Testimony of the Rocks). Despite the English publisher's extravagent claim "that every scientific book written at the time is obsolete" it appears to have sunk into the mists of obscurity if not oblivion, and has certainly been ignored by the major chroniclers of geology. The book's consistent appeal, however, over half a century suggests that it had some impact, whether this was because of its popularity or the lack of spiritualist texts on geology deserves to be

investigated. Any information would be welcomed by:-

Dr. Peter Lingwood,
8 Sorrento Way,
Darfield,
Barnsley,
S. Yorkshire.
S73 9RN.

148. Belcher, Henry, (fl. 1840-43)

Here is all the information I can give on "our elusive eructator of Eboracum county".

The only literature references I've so far traced are in the Annual Reports of the Warwickshire Natural History and Archaeological Society, for 1840, 1841 and 1843, when he is recorded as the source of additions of 'Lias and Oolitic fossils' to the Society's collections which are now in our old collections. (Ann. Rep. 4 p.5. 1840, 5 p.6. 1841, 7 p.7. 1843). This material was coming into the museum within four years of its foundation in 1836. But in none of the Reports (1837-1892) does the name Belcher appear in the list of members.

The collection is numerically small, consisting of about 100 specimens, all from Yorkshire. The material breaks down as follows:

1. Upper Lias material (59 specimens)

All from Whitby. Includes thirty good Toarcian ammonites, the remainder assorted other classes of mollusca and a few pieces of fossil wood and plant, of unexceptional quality.

2. 'Deltaic Series' Plants (22 specimens)

Good quality material from Whitby.

3. Coralline Oolite and Kellaways Beds (18 specimens)

Some specimens labelled Malton, a likely locality for most of this material, which includes four reptilian bones (Coralline Oolite) and assorted unexceptional mollusca.

Neither Barbara Pyrah nor Whitby Museum have been able to shed any light on him, and so far he's remained a total enigma. Any light you can throw on why this guy was giving stuff to a museum in Warwick would be gleefully received.

Tristram Besterman,
Warwickshire Museum,
Market Place,
Warwick,
CV34 4SA.

2. ITEMS AND INFORMATION FOUND

14. Callaway Charles, (1838-1915)

A fascinating insight into the career of one of our earliest appealed for collectors is given by the note below from Hardwicke's Science Gossip. (vol. 12 for 1876 p.21.)

The Sheffield Museum. - We are very sorry to see that, owing to a difference between the curator of this museum, Mr. C. Callaway, B.Sc., and one of the committee, the former has tendered his resignation. Mr. Callaway is perhaps better known among American geologists than English, on account of his knowledge of American fossil brachiopoda. The main cause of difference (which seems to us to have taken the form of persecution) was that the member of the committee aforesaid thought less of "old bones, and things of that sort," than Mr. Callaway did. The question should be asked by those who love science in Sheffield - What right has such a man on the committee?

Any further news about Callaways connection with Sheffield Museum and whether this may lead to any lost portions of his collections would be welcome. And who was "the man on the committee" ? !

H.S. Torrens

69. Payton, Joseph Esq., of Dudley.

In 1825 (on February, 20th) he presented Dudley fossils to the Geological Society of London from "the Dudley limestone and the coal shale" (Transactions of the Geological Society of London 2nd series vol. 2. 1829). This donation gives his christian name at least.

H.S. Torrens.

96. Belcher, Admiral Sir, Edward (1799-1877)

I noticed, while at the Royal Society recently, that Belcher was one of a select band of candidates whose application for Fellowship of the Society (F.R.S.) was turned down! It would be interesting to investigate the reason for the Society's decision.

H.S. Torrens.

123. Chalk Fish Skull

Now that my account of "A prepared fish skull from the English Chalk" has appeared in "The Geological Curator," vol. 3, no. 6. 1982, pp.395 & 396, I should like to point out an omission, mainly due to my typing.

In the first paragraph "an exceptionally well preserved skull with associated/pectoral fin ...." should read, "an exceptionally well preserved skull with associated bones of the right pectoral fin ....".

John N. Carreck,
New Hall,
Small Dole,
Henfield,
West Sussex.

129. Colenutt, George William (c.1862 - 1944)

Colenutts discovery of fish in the Eocene of the Isle of Wight was announced in Hardwicke's Science Gossip (vol. 16 p. 141 for 1880) as follows:-

Discovery of Fossil fish in the Eocene Strata of Ryde, I.W. - The cliffs (if they may be so designated) are about 3 feet high. To the height, on an average, of about 20 feet and for 30 feet inland there is a slipping talus covered with vegetation, and composed of clay of various colours, with blocks of irregular laminated fresh-water Binstead limestone with ripple marks, and containing Limnei, Planorbes, etc., and rolled fragments of the bones and carapaces of turtles with a few small teeth (rare) of evidently a species of reptile and small mammalian teeth. The slippery soft clay contains no organic remains as far as I am aware. On the shore level with the shingle are strata of clay in situ, the whole series not being more than three feet thick as far as I can judge. The following is a list of the strata with their characteristic fossils:- (i) A layer of bluish or reddish soft tenacious clay with the nodules of hard laminated clay, in which are found the small fossil fish, with scales, bones, vertebrae, etc., of larger fish, leaves of ferns, etc., and rushes, etc., and fragments of araucaria. (ii) Strata containing masses of paludina crushed or perfect, containing vertebrae from one-eighth to three-quarters of an inch in diameter at widest part, turtles, bones and portions of wood etc., also small nodules of hard laminated clay with cyprides. Small slabs of comminuted fragments of paludine held together by being impregnated with iron pyrite. - G.W. Colenutt.

(Mr. Colenutt's discovery of these fossil fish is of great value. We have not seen more perfect specimens, even from Monte Bolca, than those he sent us, and which we hope will shortly be described - Ed. S.G.)

The advert reproduced below from the same source (vol. 17 p. 71 for 1881) shows that Colenutt was dealing commercially in this material and some of his best material may have become widely dispersed.

Primary or secondary fossils wanted, in exchange for Eocene tertiary fossils, or will sell cheap; list sent. Also sand from Mediterranean, containing foraminifera; exchange as above. - G.W. Colenutt, 48 Union Street, Ryde, I.W.

H.S. Torrens.

140. Silvester, Norman Langton (1894-1969)

The following entry from who's who 1963 (p. 2789) provides basic biographical information:-

Silvester, Norman Langton, M.S., F.R.Met.S. F.R.S.A: F.M.A.: Curator Russell-Cotes Art Gallery and Museum, Bournemouth, 1932-58, retd., b. 28 Sept. 1894; s. of Samuel Joseph Silvester: m. 1922. Dora Ellwood, three d. Educ: King's College, London. Graduated with 1st Class Honours London University, B.Sc. 1920, M.Sc. 1922 Lieut. R.N.V.R. attached to R.N.A.S. European War, 1914-18: formerly Curator Public Art Gallery and Museum, Doncaster: Pioneer of idea of Borrowing Pictures from Public Art Galleries for the Home, inaugurated Bournemouth, 1933; Vice-President, Medical Art Society: "Beggar extraordinary" for Geological Terrace, Bournemouth 1951. Publications: Bulletin and Critical and Explanatory Catalogues of the above; Papers on Meteorology and Airship Navigation and Geology in Proceedings of Meteorological, Aeronautical and Geological Societies. Recreations: wood carving, skating. Address: 17 Braidley Rd., Bournemouth, T: Bournemouth 24277.

The Bournemouth Museums Bulletin (vol. 36 p. 58 1972) provides further information about the curators of the Russell-Cotes Art Gallery and Museum in Bournemouth; including Silvester.

Mr. Quick retired in 1932 and was succeeded by Mr. Norman L. Silvester, Curator of the Doncaster Museum and Art Gallery in Yorkshire, who although primarily a geologist shared Mr. Quick's wide variety of interests. His boundless energy is still acknowledged in the fond memories of his former professional colleagues. An ice skater of most exceptional talent. Mr. Silvester was also keen on practical jokes such as when he ducked down and ran behind his fellow Curators to appear at both end of an official Museums Conference Photograph. It was Mr. Silvester who started the Picture Borrowing Scheme whereby anyone in the country can borrow pictures worth up to fifty pounds for one pound (one guinea until 1969) per picture per annum. This brain-child of Mr. Silvester has since been copied by some of our national institutions and by many other provincial museums in Britain. The money raised by the subscriptions to the Picture Borrowing Scheme is used to purchase further works usually from the annual exhibitions in the Art Gallery of the Bournemouth Art Club, the Southbourne Art Society, the Royal Society of Marine Artists and the Society of Wildlife Artists. Another highly successful venture introduced by Mr. Silvester is the Geological Terrace outside the Museum where 202 stones cover 2,600 million years of history. He was Curator for more than half of the fifty years we are now commemorating from 1932 to 1958 and, like Mr. Quick, retired in Bournemouth. He died early in 1969.

P.C. Ensom,
Dorset County Museum,
Dorchester,
DT1 1XA.

143. Smith, Richard Thomas, born 1825 fl. 1878

I have been interested in Smith ever since coming across the following entry in the 1871 Census return for Weymouth in Dorset.

2 Augusta Place.
Richard T. Smith head mar. 45 geologist born Wootton Bassett Wilts. Ann Ham E. wife 50 born Melcombe Regis. William Jno Ham son 18 born Melcombe Regis. Charity Elizabeth dau 16 born Melcombe Regis. Elizabeth R.H. 15 born Melcombe Regis. Charles Farmer son 13 born Melcombe Regis. Ann Ham E. dau 9 born Melcombe Regis. Henrietta Caroline dau 6 born Melcombe Regis. Emma Read servant 21 born Sutton Dorset."

Ken Rogers, Wiltshire County archivist (in. list. 6.3.84) very kindly tells me Smith's parents Thomas Smith and Elizabeth Hawkins, were married at Wootton Bassett on 9th August, 1821, where Thomas was a saddler and harness maker. Richard Thomas Smith, his son was baptised there on 7th September, 1825. Other advertisements or exchanges of material involving R.T.S. have been noted in Hardwicke's Science Gossip vol. 9), 264 (for 1873) and vol. 10. pp. 24, 72, 264 (for 1874). He certainly seems to have supplemented his income as a geologist by trading in geological and biological material at this popular seaside resort. The last so far heard of him in print is an extract from a letter from "Mr. R.J. Smith, geologist of Weymouth, December, 1877" about the Chesil Bank and the effect of storms in that year. This was published in W.J. Black's "Remarks on the Chesil Bank" in Transactions of the Manchester Geological Society vol. 15 p. 50. 1879. Ron Cleevely 1983 World Palaeontological Collections p. 269 also records that the institute of Geological Sciences (now the British Geological Survey) collections contain Jurassic fossils from the Weymouth area purchased from Smith between 1869-1878.

H.S. Torrens.

148. Belcher, Henry (c.1786-1854)

This "eructator of Eboracum County" emerges as very unelusive! In a list of subscribers to the new born Whitby Literary and Philosophical Society dated 7.11.1823 (North Yorkshire Record Office ZW IV 14.1.3 3). he is listed as a Vice-President and he was elected to this post at the public inaugral meeting on 17.1.1823 (ZW IV 14.1.1).' Henry Belcher's long connection with this Society of which he was President from 1838 to 1854 is detailed in H. B. Browne's 1949 The Story of Whitby Museum pp. 4, 6, 7, 27, 116, 121, with his portrait opposite page 13. He was a solicitor and the Whitby Coroner and lived at Sandygate.

He donated a fossil fish and the head of an ichthyosaurus from the local Lias to the Whitby Literary and Philosophical Society Museum in 1838 (Ann, Report of WLPS 16 p. 6. for 1839). He died in 1854 (Ann. Report of WLPS 32 p. 3. for 1855). The exact date and place of his death is revealed in the obituary notice in the Gentleman's Magazine new series vol. 42, p. 407. 1854 reproduced here.

Feb 17. At Warwick, aged 68, Henry Belcher, esq., solicitor, of Whitby, Yorkshire.

He was collecting fossils by 1817 when Rev. George Young, noted some of his treasures in his History of Whitby (vol. 2. p. 780). He is almost certainly the "Mr. Belcher" who donated Whitby material to the Yorkshire Museum in 1823. He is also the person honoured in Martin Simpsons ammonite species now called Caloceras belcheri

Henry died at Warwick and this and the donations to the Warwickshire Natural History and Archaeological Society are explained by his brother Charles Belcher's connection with Warwick. Charles was one of the first subscribers to the Whitby Society in 1823 (ZW IV 14/1/3) and he was also an Honorary Curator of the Whitby Museum from 1830-1840 (Browne 1949 p. 117). He left Whitby in 1840 and was elected an Honorary Member as of Warwick in 1841. (Ann Rep. 33 p. 14 1855 and Browne 1949 p. 119). He died in 1859.

H. S. Torrens.

COLLECTIONS, COLLECTORS AND MUSEUMS OF NOTE

35. WHITE WATSON (1760 - 1835)
by John A. Cooper.

Students of this celebrated Derbyshire mineral worker and dealer may be interested to know of the following item from the geological collections of the Booth Museum of Natural History, Brighton. The photograph (Fig. 1) contains most of the relevant information concerning this cabinet; not apparent may be its size (232 x 170 x 170 mm) and that it contains a collection of 96 samples of Derbyshire rocks and minerals, approximately 30 mm square and polished on one side. These are contained in seven wooden drawers and are numbered to correspond with the first 96 entries in an accompanying catalogue (Fig. 2) hand-written by Watson himself (compare handwriting with letter from Watson reproduced in Riley and Torrens, 1980). Entries 96-157 in the catalogue list 'fragments of Rocks which compose the Mountains of Derbyshire". We do not possess these specimens and the entries have been ruled through at an early date. The catalogue is titled "Catalogue of a Collection of Fossils, the produce of Derbyshire, Collected and arranged by White Watson, F. L. S. Bakewell 1796". This title is one of many varieties on the same theme (Ford 1962; Torrens 1975, p. 99). There is no indication that this collection was ever accompanied by a 'delineation' or section.

It is perhaps worth noting that Watson's use of the term 'Fossils' is not consistent with modern or even 19th century usage. This collection emphasises the point by containing only 4 specimens of any palaeontological interest at all and one of these is catalogued as a 'variety of marble'.

An inscription on the inside cover of the catalogue records the purchase of the collection by Sir Cecil Bishopp, Bart, F. R. S. (1753 - 1828), August 1796 at Buxton. It stayed in the same family until 1935 when in February of that year an entry in the Register of the Brighton Museum records that we received a whole series of objects including the Watson cabinet from Mary Cecil, 17th Baroness Zouch (1875 - 1965) of Haryngworth (Parham, Sussex), then of Queen Anne's Mead, Windsor, through her husband, Sir Frederick Frankland Bt. (1868 - 1937), late of Loxwood House, Loxwood near Billingshurst, Sussex. All the objects recorded in a detailed list are described as having been brought from the Levant about 1850 by the late Hon. Robert Curzon (1810 - 1873), 14th Baron Zouche.

Though Watson's geological sections are still being found in various museum collections and the location of many others is known, this original collection in its original cabinet appears to be unique, in that, so far, it is the only one known (T. D. Ford, pers comm.). There may, of course, be other museums with similar collections or the remains of them and I hope that keepers of such will inform me or other interested parties.

Torrens, H. S. 1975 Alphabetical listing of the major geological donations to the Bath Museum. Newsletter of the GCG 1:3; 93 - 108.

Ford, T. D. 1962 White Watson, Pioneer Derbyshire Geologist Bull. Peak District Mines Hist. Soc. 1; 27-33

Riley, T & Torrens, H. S. 1980. Collections and Collectors of Note: White Watson (1760 - 1835). The Geol. Curator 2:9-10; 572-577

My thanks to Hugh Torrens, for additional information and comments.

John A. Cooper, Booth Museum of Natural History, Brighton Museum.

Fig. 1. Catalogue and cabinet of geological specimens made by White Watson.

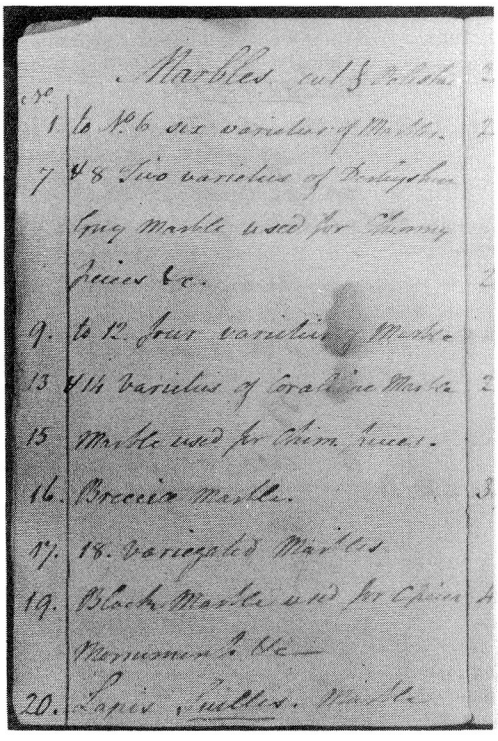

Fig. 2. A page of the catalogue shown in Fig. 1.

36. THE GEOLOGICAL COLLECTIONS OF KINGSTON UPON HULL CITY MUSEUMS

by P. L. Edwards.

INTRODUCTION

Recent work, undertaken by various members of the Natural History Department of Kingston upon Hull City Museums, has emphasised the need for a detailed account of the history of past and existing geological collections contained within the department. A catalogue of type, figured and cited palaeontological specimens has previously been prepared (Boyd, 1983), along with a concise account of probably our most important collection, that of the former Malton Museum (Edwards, 1983). The purpose of this work is to draw together all previous information, along with new findings concerning past and present collections.

HISTORY OF THE PRE-WAR COLLECTIONS

The geological component of material held in the Hull Literary and Philosophical Society Museum appears to have included significant items since it was opened in July 1823. Material from Kirkdale Cave given by William Buckland was amongst the first to be presented (Boylan, 1981), and both William Smith and John Phillips donated parts of their own collections during the museum's inaugural year.

The history of those early years has been amply covered elsewhere (Boyd, 1983); suffice to say here that after the Society gave their entire collections to Hull Corporation at the turn of the century, and after the new museum (Figure 1) opened in the Royal Institution building on Albion Street (2nd June 1902), the size of the geological collections expanded rapidly. It was the recently appointed curator, ex London and North Eastern railway clerk, Thomas Sheppard (1876-1945) who initiated a wide ranging collecting policy comprising all aspects of local and natural history. Until his retirement in 1941. Sheppard (Figure 2) was instrumental in the museum amassing its wealth of palaeontological and petrological material. Unfortunately the Central Museum, on Albion Street, received a stick of incendiaries during an air raid on 24th June 1943, the ensuing fires all but totally destroying the collections and gutting the building, which was demolished soon after.

As a consequence of this loss, the vast majority of our geological material has been acquired since that date; the two exceptions being the survival of part of the J. R. Mortimer collection of Chalk fossils and a portion of the material from the former Malton Museum.

A copy of a catalogue of type, figured and cited material lost in 1943 is held in the department; it is intended to publish this in the near future, in collaboration with the original compiler, Mr. P. J. Boylan (Leicestershire Museums).

THE POST-WAR COLLECTIONS

The past forty years in the Natural History Department have seen six members of staff with responsibilities for the geological collections. The first relevant post-war appointment was of Museum Assistant, David A. E. Spalding in March 1962. At that time the collections were situated in the Georgian Houses Museum on High Street, with an additional storage area in the Mortimer Museum nearby. Almost immediately, Spalding embarked on an ambitious collecting policy in an attempt to build up the sadly depleted collections. In the month of his appointment a quantity of cased birds was donated to Sheffield Museums in exchange for sixty Coal Measures fossils. In May, the massive collections formed by the late T. B. Parks, of Ulceby, S. Humberside, were received and work began on these immediately. During that summer, various trips made by Spalding and a voluntary worker at the Museum, Patrick J. Boylan, collected local material from the Lias, the Middle Jurassic and the Corallian. This active policy continued until July 1963 when Spalding moved to Sheffield Museums, leaving the post vacant. That winter saw the donation of over 250 specimens by Boylan as he collected material from areas such as the Lake District, Charnwood Forest and the Vale of Pickering.

The vacant Museum Assistant post was filled in January, 1964 by Boylan, a member of the Hull Geological Society since 1955, who in March was elected President of that Society. The collections continued to expand in all areas, helped in that year by donations from Dr. P. F. Rawson (now at Queen Mary College, London) and Dr. J. W. Neale (University of Hull), along with further material from Sangwins Quarries and the Hull Geological Society. The remaining portion of the C. W. Mason collection came in November 1964, the first part having been included with the T. B. Parks acquisition; and in January 1965 Patrick Boylan became the first Keeper of Geology and Natural History.

A critical storage problem necessitated the removal of the Natural History (and School Services) department to a new site at 51/52 Market Place, Hull, in April 1965. Some displays on the 'Geology of East Yorkshire' remained on High Street for a short time. The remainder of 1965 saw the negotiations for the purchase of specimens from the Kendal Borough Museums, along with the addition to the department of the Northwick Park Collection. Field work undertaken by the Keeper, often accompanying the Hull Geological Society, maintained and further increased the geological component; September 1966 saw the donation of a portion of the William Constable (1721-1791) collection. Boylan's vigorous collecting continued until his departure in January 1968, when he was replaced by Mr. Brian Latham. The new Keeper organised the storage of specimens in lockable, drawered cabinets; ten of which now house the Mesozoic material and three each for the Palaeozoic, Pleistocene and mineral collections.

Under the direction of the present Assistant Keeper, Michael J. F. Boyd, comprehensive cataloguing of the geology and natural history items began in 1979, using the MDA recording scheme. With the emphasis on consolidating and quantifying the collections, this has been possible using temporary recorders on various Manpower Services Commission funded programmes; which are now beginning to yield very useful results. This year (1983) has seen the removal of geological and other natural history material to spacious new storage and work areas in the Castle Warehouse museum complex, near the Transport and Archaeology Museum back on High Street. It is expected that personnel will move to accomodation adjacent to the stores sometime in the New Year, prior to the development of proposed new Natural History displays.

THE PRESENT COLLECTIONS

The palaeontological collections within the department comprise some 10,000 fossils, over half of which are Mesozoic along with good Tertiary representative collections and token Palaeozoic material. Until the documentation scheme is completed, precise numbers will not be known but, in the 4,000 recorded to date, there are examples of most fossil groups. Perhaps the most thoroughly covered to date are the ammonites and bivalves. A triple-bond data security system is operated; the specimens are stored in individually labelled card trays. Cabinets are arranged stratigraphically and then sub-divided taxonomically wherever possible. Special areas of interest are the Corallian fossils (most ex Malton Museum), a collection from the Elsham Sandstone (T. B. Parks) and rich, representative material from the Lias and the local Chalk.

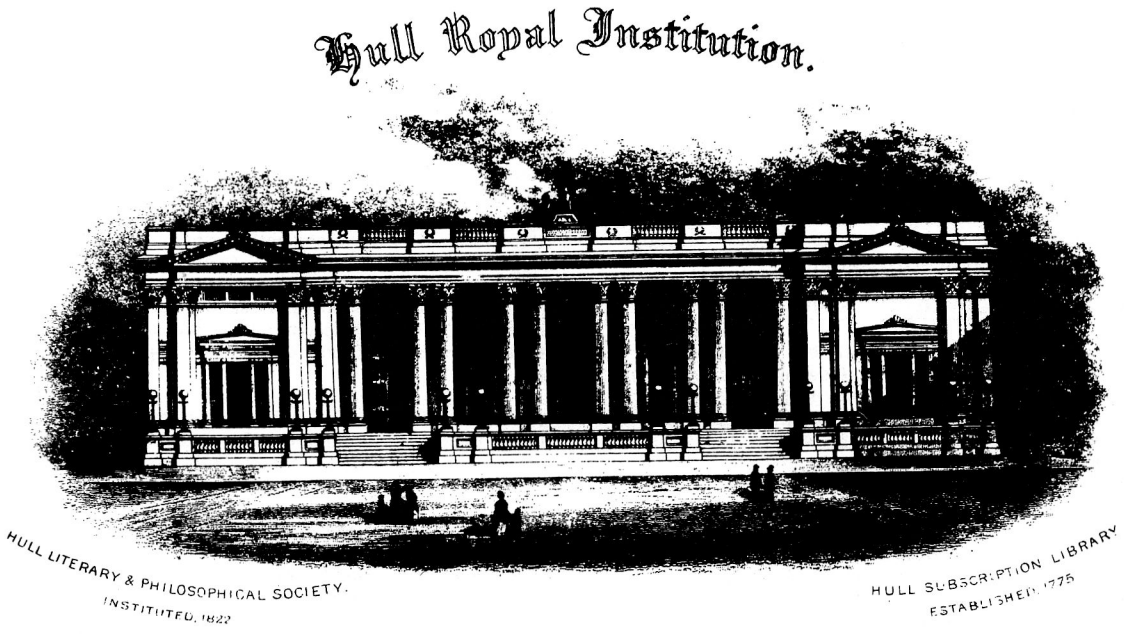

Figure 1. Royal Institution Buildings, Albion Street, Hull. circa. 1860.

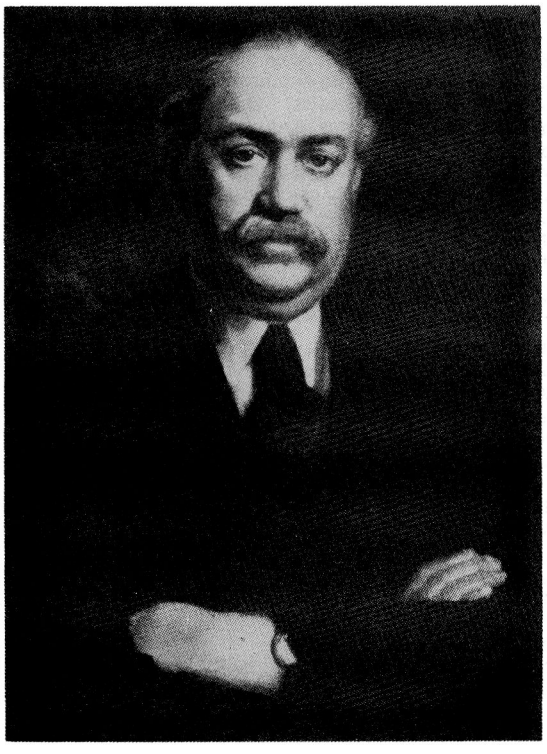

Figure 2. Thomas Sheppard F. G. S. (1876-1945). Curator 1900-1941.

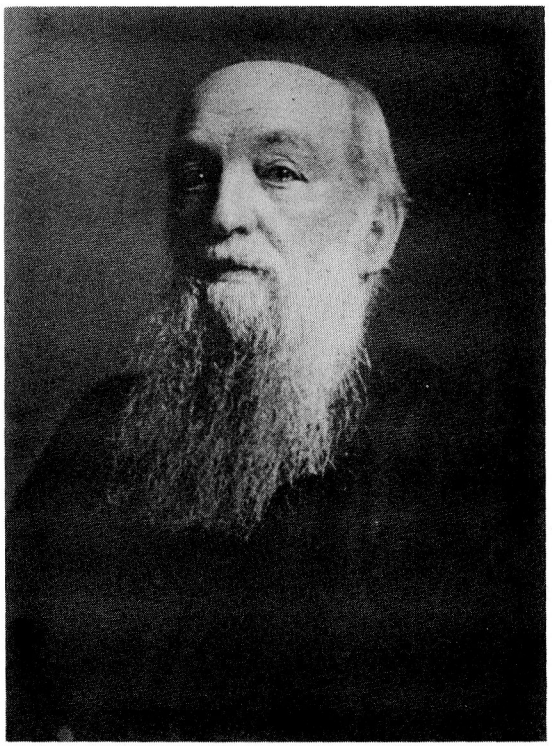

Figure 3. J. R. Mortimer (1825-1911).

The mineral and rock specimens total an estimated 750 items. The petrological material is arranged under rock type (i.e. igneous, metamorphic or sedimentary), whilst minerals are grouped under family headings such as silicates, lead, iron and calcic minerals. There is a small collection of curious geological phenomena and a collection - maintained separately - of local building stones.

With the exception of the Malton Museum and the J. R. Mortimer material, all these main collections listed below have been acquired since 1943.

BEVERLEY MUSEUM

A large donation of (mostly mounted) bird and mammal specimens came from Beverley whilst the museum underwent re-organisation in March, 1962. The gift also included the 'Akroyd Collection of polished stones from the Yorkshire Coast', which had previously been donated to Beverley Museum by Mr. Chas. E. Champney. The collection comprises a set of 250 rocks, minerals and fossils with little or no documentation, most of which have at least one face cut, ground and polished (KINCM:33.62).

CONSTABLE, WILLIAM, F.R.S. (1721-1791)

William Constable has been described as a man of outstandingly good taste; certainly his achievements in the 'arts' and 'sciences' bear witness to this. He inherited the estate of Burton Constable in Holderness from his father in 1747 and did much to restore and refurnish both the interior and exterior of the ageing Elizabethan house. He was a gentleman who took pride in his possessions, having the skill and wealth to appreciate them to their full. Thomas Chippendale was employed to supply furniture for the house and Constable's architectural advisers included Lancelot Brown, Thomas Lightoller and James Wyatt.

As a scientist William Constable observed and studied a wide range of subjects. Principal amongst his interests of botany, geology, zoology and physics was the study of electrical machines and equipment; many of the latter are still preserved at the Hall. The work of Joseph Priestly was partially financed by Constable over a period of years. In 1775, Constable became a Fellow of the Royal Society.

William Constable's geological and biological collections are maintained in a 64 drawer 'cabinet' at the Hall. They include marine mollusca, corals, echinoids, rocks, minerals and fossils. A sample of this collection was donated to Hull Museums by the present owner, Mr. John R. Chichester-Constable, in September 1966. Included in this sample (KINCM:100.66) are over 70 fossil specimens, eight of which are from the Upper Jurassic lithographic limestone of Franconia, Bavaria. The remainder are mostly Carboniferous from various localities, accompanied by some Lias and Cretaceous material. Approximately half of the fossils have attached labels in Constable's hand, although many of these have long since become illegible. There is also a collection of 140 rock and mineral specimens which, like the fossils, are maintained separately from the other departmental collections.

DUNN, M.M., MRS

Mrs. Dunn was the owner of the Burstwick Gravel Pit, North Humberside when, in March 1955 a donation of some 160 bones of Pleistocene mammals was made to the museum. Collected from the Kelsey Hill Gravels since the 1930's the material included bovid, rhino, elephant and reindeer remains. The new owners of the Burstwick and Kelsey Hill pits, Sangwin Quarries Ltd. followed the original donation (KINCM:23.55) with additions in 1959, 1960, 1963 and 1964. These gifts added a further 120 items, again Recent and Pleistocene, many of which were identified by Dr. A.J. Sutcliffe (B.M. (N.H.)) and cited by Dr. L.F. Penny (1963). The Gravels are thought to have been deposited during the later stages of the Last Glaciation (Weichsel), the contained fossils having been picked up from pre-Weichsel deposits (Penny, 1963). Gravel extraction at the pits ceased several years ago; today there is a concrete manufacturing plant in the Burstwick excavation.

FENTON, K., MR.

A lecturer in biology at Hull College of Further Education, Mr. Fenton has been Hon. Secretary of the Hull Geological Society for the past ten years. A collection representing the Geology of Holderness was donated by Mr. Fenton in 1971 (KINCM:72.71) and was soon followed by his personal collection of Jurassic plant fossils (KINCM:74.71). The latter consists of material from the East Yorkshire coast collected between 1961 and 1971, a total of 50 specimens. Whilst this collection has yet to be studied in any great depth, it is significant since it is the only palaeobotanical material from the Yorkshire Jurassic Flora held in the museum. Hence this collection is maintained separately.

HULL GEOLOGICAL SOCIETY (founded 1888)

A major donation from the Society in 1902 was lost during the last war (see Lost Collections), but post-war gifts have served to increase the numbers of specimens in many areas. Two small donations in 1945 were followed in August 1964 by a suite of North Lincolnshire fossils (KINCM:61.64), in part collected by P.J. Boylan. Amongst this material was a rhynchonellid figured by Owen and Thurrell (1968). Many field meetings, attended by Messrs. Boylan, Spalding and Latham, were with the Hull Geological Society who, therefore are responsible for other donations made in May 1964 (Chalk fossils), September 1964, April 1965, August 1965 (Kellaways Rock, South Cave), July 1966 (Lincolnshire), 1970, 1971 and August 1972 (Chalk).

KENDAL BOROUGH MUSEUM

The purchase of some 2,500 land, marine and freshwater molluscan specimens was made in March 1965. Some geologically pertinent material was included in this consignment, in the form of 200 specimens collected from both worldwide and Yorkshire localities. The material (KINCM:44.65) consisted of assorted fossils and petrological hand specimens, all with adequate documentation. Of particular interest was a near complete Ichthyosaur skeleton from the Yorkshire Lias which is currently on loan to Scunthorpe Museum and Art Gallery.

LEE, JOHN, DR, F.G.S., F.R.S. (1783-1866)

A well known collector of antiquities, Lee was born on 23rd April 1783 the eldest son of John Fiott, a merchant of London. He was educated at St. John's College, Cambridge and graduated B.A. in 1806, M.A. in 1809 and LL.D. in 1816. In 1815 he assumed the name of Lee, as a result of the will of his maternal uncle William Lee Antonie, which made it a condition of his inheriting the estates of Colworth in Bedfordshire, Totteridge Park and others. In 1827 he inherited the estate of Hartwell in Buckinghamshire from the Rev. Sir George Lee, Bt. After graduating, Lee travelled Europe and the East collecting many objects of antiquity before his return to England to resume the study of Law. At Hartwell House he built an observatory in the south portico and, from 1837, James Epps became his assistant astronomer. Dr. John Lee was an original member of the Royal Astronomical Society and it's President in 1862; he was elected a Fellow of the Royal Society in 1831. His museum at Hartwell contained a large collection of geological

specimens, along with many other items from a wide range of fields. It was the meetings of his friends at the House that led to the formation of the Meteorological, the Syro-Egyptian and the Anglo-Biblical societies. He died at his home on 1st April 1866, a strict teetotaller and an enemy to the use of tobacco; having married twice. His property passed to his brother, The Reverend Nicholas Fiott who assumed the surname of Lee.

A guide to the Literary and Philosophical Society Museum of 1860 (Anon, (Jukes, A.) 1860) mentions material donated by Dr. Lee F. R. S. of Hartwell, although no further details have been found. Our second John Lee collection (KINCM: 85.56) came from the County Museum of Buckinghamshire, at Aylesbury in 1956. This was part of the collection of 'Lias and Oolite fossils' presented to them by the Trustees of the Lee Settled Estates. The collection includes 160 specimens, collected by Lee, and consists mostly of Lias material from Whitby, North Yorkshire, and Granby, Nottinghamshire. Many of the specimens bear original Lee labels and the donation was accompanied by a brief catalogue. Of particular note is a fine, extensive collection of Lias vertebrate material.

MALTON MUSEUM

An approximate 600 specimens survived the bombing of Albion Street, including a particularly valuable collection of Corallian invertebrates. A biography of the curator of Malton Museum, Samuel Chadwick, and a history of his assembled collections has previously been prepared by my wife (Edwards, 1983). Suffice to say here that this beautifully-prepared collection has now been completely accessioned and recorded on MDA cards. These cards are now awaiting computerisation to form a discrete catalogue of the surviving collection (KINCM:2.38). In addition to this, is the material bearing the pre-war accession number KINCM:1.38 which includes much of our cited material (Boyd, 1983). Much of this had been identified by Dr. W. J. Arkell and can be fairly certainly attributed to Chadwick's collections from the Malton Museum.

MORTIMER, JOHN ROBERT (1825-1911) (Figure 3)

The brothers R. & J. R. Mortimer of Driffield (originally of Fimber), East Yorkshire, were corn merchants who traded during the latter part of the last century. Their particular interest was in the vast number of prehistoric artefacts that could be found on the surrounding Wolds; the office at Fimber was noted for its display case containing typical Neolithic tools. J. R. Mortimer outlived his younger borther (Robert, 1829-1892) and has been most remembered for his exploration and careful excavation of burial mounds in East Yorkshire. His life's work was brought together in 'Forty Years Researches in Britain and Saxon Burial Mounds of East Yorkshire' (Hull: A. Brown & Sons, 1905), the results of methodical excavation and detailed observation of over three hundred barrow openings. Such was his reputation in the district that, in his heyday, any kind of flint implement unearthed was known to farm workers as a 'Mortimer'.

As the number of objects the brothers amassed increased, both through their own efforts and as a result of circulated handbills which often offered rewards for the greatest quantities of implements received (Figure 4), it became necessary for Mortimer to build a special museum in Driffield to house them. This was built on Lockwood Street, a short walk from the railway station, in 1878 and it still stands today.

It is the geological collections of Mortimer that are of most relevance to this account; for nearly fifty years he had few serious rivals save Samuel Chadwick of the Malton Museum. J. R. Mortimer appears to have adopted Chadwick's method of preparation, in leaving a small block of the enclosing sediment adherent to the otherwise completely developed specimen. Onto the neatly shaped block of sediment he wrote an Ordnance Survey 6" sheet number and then his own 'field number' which referred to the particular field the specimen was collected in. Since the department possesses his original hand-coloured, annotated field maps, the localities of specimens can be found precisely.

Such were his geological collections that they occupied the ground floor of the Mortimer Museum, in wall cases and six large table cases (Sheppard, 1900), with the archaeological and antiquarian exhibits housed in the elevated gallery above. The total number of objects housed in the Museum must have run into tens of thousands. However, the enthusiasm and energy of J. R. Mortimer were brought to an abrupt halt by his sudden death on the 19th August 1911 (Sheppard, 1911a; 1911b).

It had long been Mortimer's wish that his collections should remain in the district; his will allowed twelve months for the town of Driffield to make some arrangement to this effect. Driffield having failed to fulfill the conditions, the City of Hull, probably goaded by Tom Sheppard, attempted to raise the £3,000 required by the Trustees. On condition that the collections would be stored together in one building, and billed as 'The Mortimer Collection', the reduced price of £1,000 was agreed upon. Through the public-spirited intervention of Co. G. H. Clarke, who purchased the material and then donated it to the Corporation, these fine collections then came to Hull Museums. The archaeological material was almost immediately exhibited in the Victoria Galleries at the City Hall (Sheppard, 1929), following the removal of the art collections to the newly completed Ferens Art Gallery. The precise fate of Mortimer's geological assemblage is somewhat uncertain. The Chalk material was certainly exhibited at Albion Street and the writer can only presume that the boxed Lias, Oolitic, Speeton and Glacial material (Sheppard, 1900) accompanied them there.

With the loss of the Central Museum, in 1943, the greater part of the collection (of unknown extent) was destroyed, the only survivals being some 350 Chalk fossils remaining in our possession today (KINCM:3.38). All of these are specimens definitely attributable to Mortimer by virtue of the inscribed sheet and field numbers. The material is all Chalk, mostly Upper, particularly rich in brachiopods and bivalves. Sadly, this is all that remains of the once glorious collections of J. R. Mortimer; their former size and significance can only be hinted at by the extent of his magnificent archaeological finds which today constitute at least one-quarter of the Museum's archaeological material.

PARKS, THOMAS BENJAMIN (1896-1961)

The collections of T. B. Parks were donated to the Museum in May 1962 by his widow. They were heralded at the time as the most important acquisition of that quarter-century (Boylan, 1964); indeed they are still the largest discrete geological acquisition in the museum to date (KINCM:80.62). Parks' own collection consists of approximately 1,200 specimens of mostly Jurassic and Cretaceous age, all meticulously prepared and documented. Highlights within this material include Elsham Sandstone fossils, Kimmeridge Clay and Kellaways Rock specimens and a collection of local building stones.

The Elsham Sandstone fossils were collected in the 1940's and '50's from the pits around Elsham, South Humberside. Mr. Parks seemed convinced that the material was in situ, despite the opinion of Dr. L. F. Spath (B. M. (N. H.)) who

stated that the material was derived. On Dr. Spath's suggestion four ammonites from Elsham were presented to the British Museum (Natural History) by Mr. Parks (Figure 5); on the basis of these (C 47908-11) Arkell and Calloman (1963) later described a new variety of Xenostephanus ranbyensis, X. ranbyensis var. elshamensis. It was not until 1963 when Drs. Kent and Casey re-examined the stratigraphy of that area and concluded that the proposed Elsham Sandstone Member was of Lower Kimmeridgian age. Later examinations of the Parks material held in Hull Museums, as listed by Boylan and Rawson (1964), confirmed this view. Since this re-appraisal, a further 30 specimens have been found by the writer in the Parks collection. The bulk of these are raseniid ammonites accompanied by a few bivalves, making a total of 110 specimens that are identifiable as Elsham Sandstone.

The Wrawby Cutting (South Humberside) in the Kimmeridge Clay was the source of a well preserved set of ammonites, collected by Parks in the 1950's. Several of these were identified by Dr. Spath and our records show that three ammonites from Wrawby were presented to the City and County Museum, Lincoln by T. B. Parks.

Some of our best Kellaways Rock (Callovian) specimens are in the Parks acquisition, which also includes a large set of polished minerals along with numerous precious and semi-precious stones.

T. B. Parks was born at Ulceby, South Humberside on 24th September 1896, the son of George and Mary Ann Parks. His father was a journeyman blacksmith. During service in the 1914-18 war, Parks made the acquaintance of two future Hull naturalists, J. B. Fay (Hull Museums' Curator after Sheppard's retirement) and T. Taylor. The three remained friends after the war, but it seems to have been Parks' meeting and subsequent close friendship with C. F. B. Shillito of Brocklesby that led to his interest in geology and palaeontology. By profession a Master Builder, Mr. Parks' collections indicate that he had been collecting since, at least, 1932. In connection with his work of restoring and renovating the stonework of North Lincolnshire buildings Parks amassed a large collection of building stones and gravels.

'Ben' Parks' closest colleagues appear to have been Mr. Shillito and C. W. Mason of Hull. Indeed, a series of photograph albums, donated by Mr. & Mrs. C. M. Parks of Ulceby during the course of research for this article, show many historic Lincolnshire buildings; many of the photographs having been taken by Mr. Mason. T. B. Parks was an active member of the Hull Geological Society during the first half of this century, and also a member of the Lincolnshire Naturalists Union and the Yorkshire Geological Society.

The collections came to Hull Museums after his unexpected death in November 1961; included in the two furniture van loads of material were the incorporated collections of C. F. B. Shillito, C. W. Mason and P. Cambridge.

SHILLITO, CHARLES FREDERICK BRIGHTMAN (1870-1950)

Described by T. B. Parks as 'the greatest geologist in Lincolnshire', Shillito made important contributions to scientific knowledge of his home county. Born at East Halton, South Humberside and educated in Leeds he moved to Brocklesby in 1903 to take up his duties as Clerk of Works to the estates of the Earl of Yarborough. He remained in this position until the age of 78, when he had to retire owing to ill-health. An authority on Jurassic and Cretaceous geology, he was best known for his records of Lincolnshire wells and boreholes, often made in collaboration with T. B. Parks. From 1933, Shillito's interest in conchology led to his investigations of the numerous Post Glacial deposits of Lincolnshire and Yorkshire. The molluscs he collected were identified by J. F. Musham and these identifications verified by A. S. Kennard. The majority of the specimens were from Broughton, near Brigg, along with material from Castlethorpe, Scawby, North Ferriby, Barmston and Skipsea.

Like Mr. Parks, Shillito was an enthusiastic member of many local societies including the Hull Geological Society, the Lincolnshire Naturalists Union, the Yorkshire Naturalists Union, the Yorkshire Geological Society and the Sheffield based Sorby Geological Society.

The C. F. B. Shillito Collection held in Hull Museums includes over 35,000 sub-fossil molluscs, together with all his notes and correspondence with Musham and Kennard. Many of his collecting excursions were made in association with C. W. Mason (below). In addition to this sub-fossil material, within the main body of the Parks' Collection (sensu stricto) there are about 50 fossil and mineral specimens given to Mr. Parks by Shillito.

The immense size of this collection, compared to others in the department, means that the Shillito material has not yet been fully catalogued. Letters, in our archival collection, between T. B. Parks and the Secretary of the Lincolnshire Naturalists Union in 1950, F. T. Baker, mention that much of the work of their life-long friend C. F. B. Shillito was at that time unavailable to fellow geologists ('We must make certain that this valuable material and life's work is not lost to the scientific world'). Perhaps as a consequence of this view, T. B. Parks ensured that he became temporary custodian of the Shillito material.

MASON, CECIL WRIGHT (1884-1964)

Material donated by C. W. Mason came to the Museum in August 1962. This particular gift was of 28 specimens of mammoth teeth, tusks and bones. There was, however, material included within the Parks acquisition that was originally collected by Mason.

A native of Hull, C. W. Mason was an engineer with the Yorkshire Water Authority and was particularly interested in the then infant science of hydrogeology. Described as a stalwart of the Hull Scientific and Field Naturalists Club (de Boer, 1964), he was also the Photographic Recorder and Excursions Secretary to the Hull Geological Society. A further donation was made after his death by Mrs. L. Mason (KINCM:167,168,169.64) of over 100 local geology and natural history specimens. His fine archive of glass lantern slides also accompanied this gift.

The material in the Parks Collection includes about 50 specimens, mostly from the Kelsey Hill and Brandesburton gravels, along with some Coral Rag and Cretaceous items. These were all collected by Mason and are well prepared and documented.

CAMBRIDGE, PHILLIP, MR.

The vast majority of the Cambridge Collection is now housed in the Sedgwick Museum, where it was the subject of a recent computerisation exercise (Etchells-Butler, 1982). However, 25 specimens collected by 'Sgt. P. Cambridge' are present within the Hull Museums' T. B. Parks material, and it has been confirmed that these two collectors are one and the same. (Cambridge material can also be traced to Merseyside County Museums, Tresise, 1976). Many of Hull's specimens are labelled 'ex P. Cambridge Collection' and include Cornbrash and Coralline Crag fossils together with specimens from Germany and France and a set of Cumberland minerals.

Other collections contained within this massive acquisition include those 'presented to TBP by J. T. Wattison of Shrewsbury, 1952' (mostly Shropshire trilobites) and a collection of Indian rocks and minerals given to Mr. Parks by Mr. Frank Whackett in June, 1954.

The importance and wealth of the T. B. Parks material has yet to be fully appreciated, since the process of cataloguing still continues. From an historical viewpoint the collections are perhaps not as significant as the Malton and Mortimer material. However, as a recent temporary exhibition has shown, the vast amount of documentation, coupled with the preparation and fine preservation of much of the material, makes the T. B. Parks Collection tremendously important as a museum reference and educational collection.

SELBY EDUCATIONAL MUSEUM

The collections held in the Hutchinson Educational Museum, Selby, were offered for disposal to national and local museums in September, 1965. After viewing, Hull Museums' staff requested that various natural history, geological and antiquarian lots be passed to Hull. The geological material acquired was in the form of 12 lots or part-lots, totalling 55 mineral specimens and 50 fossils (KINCM:195. 65). Many of the minerals are foreign, whilst the fossils have little locality information - about 50% of them are Mesozoic.

SPENCER-CHURCHILL, EDWARD GEORGE, CAPT. M.C. (1876-1964)

Educated at Eton and Magdelon College, Oxford, before joining the Grenadier Guards in 1899. He served in the Boer War and was awarded the Military Cross during the 1914-18 war. His interests were varied, being reflected in a handful of publications, and in 1943-50 he was a Trustee of the National Gallery. His estate was at Northwick Park, Gloucestershire where he died on 24th June, 1964.

Described in a Christie, Manson and Woods catalogue, from which it was purchased at auction, as 'various fossils consisting of reptile and shark teeth, amonites, nautiloids, Lias fish fragments and others', the Northwick Park Collection today consists principally of Lias and Upper Jurassic bivalves and ammonites. All the specimens are in good condition; sadly, however, no locality or stratigraphical information accompanies the collection. A total of 48 specimens have been accessioned to date (KINCM:117. 65); the lot (no. 11) described above was purchased for the Museum on 24th June, 1965.

WHITHAM, FELIX, MR.

A prominent amateur Humberside geologist, member of the Hull Geological Society, who has taken part in numerous Society and museum collecting trips which have resulted in the donation of many specimens (1962-KINCM:198. 62, 100+specimens; and February 1964). A notable donation made in July 1967 (KINCM:77. 67) was of a collection of 13 Lower Cretaceous brachiopods. These were collected by Mr. Whitham from the Melton Carstone at the Melton Clay Pit near Hull. All 13 specimens have been cited in the literature (Owen, Rawson and Whitham, 1968), after identification by Dr. E. F. Owen of the British Museum (Natural History).

WHITTAKER, DAVID R., MR

A donation made in August, 1960 of 133 specimens of Pleistocene vertebrates from the Kelsey Hill and Keyingham Gravel Pits in North Humberside. Whilst the material included the expected bison and cervid remains, they are notable in that the assemblage (Group III of Penny, 1963) included the first Pleistocene record of grey seal in Holderness and the first recorded mammalian bones from Keyingham (Group IV).

WRIGHT, E. V., MR

Approximately 50 specimens collected by Mr. Wright in 1963 and donated in February 1964. All the material is from the Speeton Clay (Lower Cretaceous) and is in particularly good condition. Most of the specimens are ammonites, which were accompanied by detailed locality and stratigraphy information (KINCM:22. 64). Notable amongst them are the Aegocrioceras spp. specimens figured by Rawson (1975).

ARCHIVAL MATERIAL

The Natural History Archive Cabinet, as previously stated, contains much in the way of personalia, correspondence and notebooks belonging formerly to individuals whose collections came to Hull Museums after their deaths. Amongst this material are papers pertinent to T. B. Parks, C. F. B. Shillito and C. W. Mason along with many circulars and additional notes concerning local societies such as the Hull Geological Society, the Yorkshire Geological Society, the Lincolnshire Naturalists Union and the Yorkshire Naturalists Union. The department holds a complete set of Hull Museums Publications, a veritable 'mine' of information concerning past collections; and of particular interest is a G. W. Lamplugh (1859-1926) geological notebook.

THE LOST COLLECTIONS

The bombing, and subsequent fire, in 1943, which destroyed the majority of the geological specimens, was also responsible for the loss of departmental daybooks and accessions registers. This valuable documentation would have been lost forever if it were not for the work of Thomas Sheppard. The fact that Sheppard published in, and edited The Naturalist and regularly produced a 'Quarterly Record of Additions', along with many other Hull Museums Publications meant that an extensive literature search would reveal a vast amount of information about our former collections. This search was carried out by a past Senior Keeper and the geologically pertinent information below has been taken from a YHCRU (Yorkshire and Humberside Collections Research Unit) computer printout based on his work. Most of the detail and the biographical information has been taken from notices published in The Naturalist.

The full extent of our losses at that time will clearly never be appreciated; this information, however, must go some way towards completing our knowledge of the most important pre-war collections. Had it not been for the work of Thomas Sheppard, this valuable insight would not have been possible. Perhaps one day the true Tom Sheppard, his devotion and achievements for the Museums in Hull will be fully recognised and appreciated.

Survivals from the war have been previously listed in 'The Present Collections'.

BEDWELL, JUDGE (d. 1900?)

Described at the time as an ardent geologist, the Judge built up this large collection during his youth, spent in Bridlington. It appears to have consisted mainly of mollusca from the Bridlington Crag (marine deposits of basal Middle Pleistocene age), along with various flint fossils from the South of England. Reference is made to a 'magnificent tusk of a bear', Ursos arctos said to be the first evidence of that animal from the Crag. The collection in 1902 is recorded as containing many

NOTICE.

If you have got any Relics belonging this neighbourhood to dispose of, please offer them to the owner of this Museum.

J. R. MORTIMER.

T. Holderness, Printer, Middle Street, Driffield.

Figure 4. Mortimer Notice from the Mortimer Museum, Driffield.

British Museum (Natural History)

Cromwell Road, London, S.W.

31st May, 1954.

SIR,

I am directed by the Trustees of the British Museum to convey to you the expression of their best thanks for the Present mentioned on the other side, which you have been pleased to make to them.

I have the honour to be,

SIR,

Your obedient Servant,

Director.

T. B. Parks, Esq.,
Ulooby,
N. Lincs.

Figure 5. Certificate from the B. M. (N. H.), presented to T. B. Parks.

Figure 6. H. C. Drake F. G. S. (1863-1918)

specimens utterly ruined by damp, apparently the consequence of a builders strike which took place during the erection of the Art Gallery above the building on Albion Street.

BOWER, C. R., REVEREND

At least 1,000 specimens of Cretaceous fossils from Lincolnshire, Yorkshire, Kent and Norfolk purchased from the Reverend in 1919. All had been cleaned, labelled and localised by the collector and some had been described and figured in Bower's own publications. The majority were from the Lower Chalk of Lincolnshire and most of the collection had been previously examined, and the identifications verified, by Dr. A.W. Rowe and C. Davies Sherborn.

BOYNTON, THOMAS, F. S. A. (1830-1919)

During his working life he farmed at Ulrome in East Yrokshire, before retiring to Bridlington. Whilst farming he discovered, at Ulrome, what was known then as the oldest pile-dwelling.

His large collection of Quaternary mammal remains, put together between 1890 and 1919, from the Bridlington and Holderness districts came to the museum after his death. Whilst consisting chiefly of Elk and Red deer antlers, the material also included bovid and elephant bones.

BURTON, JOSEPH JAMES, O. B. E., J. P. F. G. S. (1848-1931)

Born at Huby, Easingwold and moved to Middlesborough in 1863. After a short service with the Stockton and Darlington Railway, he joined the Cargo Fleet Iron Company with whom he remained for 41 years. Burton then partnered Sir Christopher Furness in developing the Roseberry Mines; his intimate knowledge of Cleveland Mining and the Iron and Steel Trades was often requisitioned for the national good during the Great War. He was active in national and local government circles, in 1917 being appointed Chairman of the Central Advisory Committee for the Iron and Steel Industry which dealt with the labour problem following demobilisation. In 1929 Burton was awarded the O. B. E.

At home J. J. Burton was a pen and ink sketcher with a deep interest in geology, microscopy and horticulture. He had a particular interest in the Cleveland plant beds and was an accepted authority on the Yorkshire Lias. He was a long-standing member of both the Yorkshire Naturalists Union and the Yorkshire Geological Society, a former President of the latter and the Vice-President from 1925 until his death.

Presented in 1929, the collection included type material of North Yorkshire Jurassic flora collected between 1912 and 1913. 'Mr. Burton of 'Rosecroft', Nunthorpe (North Yorkshire)' included in his collection typical specimens from coastal exposures such as Gristhorpe, Cloughton and Marske along with material from Roseberry Topping. On many collecting trips he was accompanied by Mr. Hamshaw Thomas (Dr. H. Hamshaw Thomas M. B. E., F. R. S., F. G. S. became the President of the Yorkshire Naturalists Union in 1928). The results of much of this collecting were incorporated in Burton's lengthy work on the Cleveland Ironstone (Burton, 1913).

COLE, E. MAULE, REVEREND, F. G. S. (1833-1911)

Born in Dover, educated at Brighton, Tonbridge and Rossall before entering Oxford in 1853. He came to Wetwang (East Yorkshire) as Vicar in 1865 and quickly made the acquaintance of the Mortimer brothers whom he accompanied on many of their barrow-opening expeditions. He became an active member of the Yorkshire Naturalists Union, the Yorkshire Geological Society and the East Riding Antiquarian Society; and he is said to have been a life long friend of Sledmere's Sir Tatton Sykes.

The Reverend's collection of geological, archaeological and local history material, specifically relating to East Yorkshire, was donated to Hull Museums by his widow, Lady Philadelphia Cole, in 1911. It included a wide range of fossil and rock specimens together with Red deer antlers and mammoth teeth. Collected between 1865 and his death the collection also contained specimens given to the Reverend by J. R. Mortimer.

DANFORD, C. G. (d. 1928)

A keen naturalist and sportsman who, at the time of his first donation in 1902, lived on the East Yorkshire coast in Reighton Hall, near Speeton. His first gift was of material mostly from the Speeton Clay which included large numbers of belemnites, ammonites (particularly Crioceratites spp.) and bivalves; many of which were new to Science. Worthy of note was the first record for Yorkshire of an almost complete skeleton of Ichthyosaurus thyreospondylus (Sheppard, 1902). This was excavated from the Kimmeridge Clay in Filey Bay by Danford and given to the museum after the intervention of J. W. Stather (see later) of the Hull Geological Society.

After moving to Folkestone, Danford continued to send material to Hull in the form of a 'wonderful' series of ammonites from the Gault. Duplicates of new species of mammals that he had sent to the British Museum from France also came to Hull Museums before his death.

DRAKE, HENRY CHARLES, F. G. S. (1863-1918) (Figure 6)

The owner of a chemist shop in Scarborough before his business brought him to Hull prior to the turn of the century. His keen interest in the Museum led to numerous donations and his work of cataloguing, indexing and arranging the geological exhibits. He returned to Scarborough in his later years where he became a prominent member of the town's Field Naturalists Society.

The sum of his donations from 1905 to his death not only created one of our largest pre-war geological collections, but also formed the bulk of the display material in the Albion Street Museum. Initial donations were of Jurassic reptiles, fish and cephalopods from Scarborough and Speeton. Later gifts consisted of Cretaceous fish and vertebrates from Yorkshire and North Lincolnshire. The most accurate figure available for the total number of specimens he gave is 'several hundred'.

FOX, J. (d. 1902 ?)

An extensive collection of agates, rocks and fossils presented to the museum in 1902 by his widow. All the material was collected ex-drift from the Filey area and included three large ammonites from Filey Brigg.

GIBSON, WALCOT (1864-1941)

A collection of Carboniferous fossils from the Staffordshire coalfield made by Gibson during his work with HM Geological Survey, and donated in May 1903 through J. W. Stather of the Hull Geological Society.

HARKER, ALFRED, F.G.S., F.R.S. (1859-1939)

During his days in his native Hull this renowned igneous petrologist was involved in the formation of the Hull Geological Society. He was particularly interested in the study of erratic blocks and became prominent in the work of the Geological Society of London. It was from St. John's College, Cambridge that he made a donation in 1910, of an extensive collection of geological specimens that included many Yorkshire fossils. He was an honorary Vice-President of the Hull Geological Society at the time of his death in September 1939.

HULL GEOLOGICAL SOCIETY (Founded 1888)

This discrete collection came into the possession of the Society around the turn of the century through the efforts of C.E. Fox-Strangways (1844-1910) of the Geological Survey. Described as 'a very excellent and representative collection of fossils' it was donated to the museum in June 1902 by the Society to assist completion of the geological gallery. Originally from 'a gentleman in the Midlands' who put the collection together, it included material from a great stratigraphic range which had made it invaluable to the Society for teaching and demonstration purposes.

LETHER, GEORGE

A collection of fossils, principally from the Yorkshire Jurassic but also from elsewhere in Britain, purchased around the turn of the century. The 170 specimens were all carefully prepared, some having been previously figured, and a catalogue prepared for a Hull Museums Publication by H.C. Drake (Sheppard & Drake, 1909). Recorded features of the collection show it to have been rich in gastropods, particularly from the Cornbrash and Coral Rag. Whilst very little has been found about Lether, it has been noted that he was employed by most Societies visiting the region because of his quick eye and vast knowledge of Yorkshire fossiliferous localities.

MADDOCK, H.E., CANON, F.G.S. (d. 1901?)

Described as an extensive and valuable collection of Chalk and Lower Cretaceous fossils formed by the Canon and donated by his widow prior to the re-opening of the Museum in 1902.

MATTHEWS, E.R.

The Borough Surveyor of Bridlington, Mr. Matthews arranged, through J.W. Stather, for collecting to take place from the excavations on Bridlington Quay for a new Promenade. This took place in 1904 after the Surveyor had previously presented a collection to the Museum which he had made himself. This collection of Bridlington Crag material, which was displayed alongside the Judge Bedwell donation, included numerous shell fragments, some water-worn pebbles and a single (probably shark) tooth.

MIDDLEMISS, C.S. (fl. 1890-1920)

Seen as a very valuable addition at the time of presentation in 1917, this extensive collection of mostly East Yorkshire rocks and fossils came fully labelled with an accompanying catalogue. Collected during his early days in Yorkshire, it was donated whilst he was a member of the India Geological Survey. Included amongst it was described material from the 1880's excavations for the Hull and Barnsley Railway at South Cave, along with Red and White Chalk specimens.

STATHER, JOHN WALKER, F.G.S. (1856-1938)

One of the founder members of the Hull Geological Society, he took an early interest in natural history and was instrumental in many collections coming to Hull Museums. Secretary of the Society from it's formation and former President of both the Hull and the Yorkshire Geological Society, Stather was a great personal friend of Bridlington's G.W. Lamplugh (HM Geological Survey). He was a recognised authority on the Speeton Clay and the author of over 40 works on the geology of East Yorkshire and North Lincolnshire.

J.W. Stather's collections, housed in a series of mahogany cabinets, were donated by his widow after his death in April 1938. Collected between 1880 and 1930 from Yorkshire (particularly the Bridlington and Flamborough area) the material was mostly Jurassic and Cretaceous fossils and was accompanied by Stather's library of privately printed geological pamphlets. The collection, which included numerous type specimens, arrived fully indexed and catalogued with it's own manual card index.

Contained within this acquisition was material collected originally by G.W. Lamplugh F.G.S., F.R.S. (1859-1926); Dr. F.F. Walton F.G.S. (first President of the Hull Geological Society, d. 1927); C. Thompson F.G.S.; W.S. Bisat F.G.S. (1886-1973); W.C. Ennis; W.H. Crofts (1861-1935) and R. Davy, all of whom were distinguished Yorkshire naturalists of their day.

THOMPSON, C. F.G.S. (d. 1930?)

A collection of ammonites derived from the drift of Holderness made around the turn of the century. Thompson was Master of Hymers College, Hull when he made the collection; Sheppard considered it such a neccesary acquisition that he arranged for its purchase from Thompson in 1924. There is little doubt that the material included numerous type specimens; an extensive appraisal of the collection was carried out by Dr. L.F. Spath for The Naturalist in 1925 and 1926. Whilst there is no record of actual numbers, the work of Spath (1925; 1926) indicates at least 50 genera of Lias and Upper Jurassic cephalopods.

WALTON, H. ELLIOT

Tertiary fossils from the Barton Clay at Highcliffe, Hampshire collected between 1912 and 1914. The material included various molluscan remains and some reptile teeth, collected by the donor (of Dalmeny, Newmarket) and donated in 1914.

The lost collections listed above are those which have been referred to in the literature on more than one occasion. This has therefore allowed a quite accurate picture of their contents to be drawn up. However, many collections and collectors are often mentioned in name only (Sheppard, 1933; Anon, (Jukes, A.), 1860) or with very sparse details. It is those individuals or institutions who donated geological material, prior to 1943, which are listed here. They include, alphabetically:-

Messrs. Bearman & A.R. Warnes, Sir Henry Cooper (b. 1807), C. Davies Sherborn F.G.S. (1861-1942), Mrs. M.M. Dunn, C.E. Fox-Strangways (1844-1910), The Geological Survey of Great Britain, Rev. J. Howell F.G.S., Mr. W. Jackson Hardy, Prof. P.F. Kendal (1856-1936), Dr. John Lee F.R.S. (1783-1866), J.E. Lee F.G.S. (1808-1887), Mr. E.B. Lotherington, Mr. G.W.B. Macturk, C.B. Newenhall, H.M. Platnauer F.G.S. (1857-1939), The Royal College of Surgeons, Scarborough Philosophical Society, Rev. J.E. Shephard F.G.S., G. Sheppard, Mr. T. Smith, John Stears, J.V. Thompson, T. Thompson of Welton,

Dr. F.F. Walton F.G.S. and the Whitby Museum.

Acknowledgments

I am indebted to Mr. & Mrs. C.M. Parks of Ulceby for their help and information about the late T. B. Parks. Grateful thanks for various historical details are also due to past and present members of the Hull Geological Society, particularly Mr. Patrick J. Boylan and Mr. Ken Fenton. A work of this nature would not have been possible without the continual assistance of Hull Museums' personnel, past and present, temporary and permanent. Thanks are therefore due to them all; especially Michael J. Boyd and Mrs. Christine R. Edwards for their helpful guidance throughout.

References

Anon (Jukes, A., Rev) 1860 A guide to the Museum of Philosophical Society, Hull. James Plaxton: Hull. vii + 103pp.

Ark ell, W.J. & Calloman, J.H. 1963. Lower Kimmeridgian ammonites from the drift of Lincolnshire. Palaeontology 6, 219-245.

Boyd, M.J.F. 1983. Catalogue of type, figured and cited fossils in Kingston upon Hull City Museums. Geological Curator 3 (8), 476-485.

Boylan, P.J. 1964. The geological material in the T. B. Parks Collection. Unpublished Hull Museums Report.

Boylan, P.J. 1981. A new revision of the Pleistocene mammalian fauna of Kirkdale Cave, Yorkshire. Proc. Yorks. geol. Soc. 43, 253-280.

Boylan, P.J. & Rawson, P.F. 1964. Elsham Sandstone fossils in the collection of the late T. B. Parks. Unpublished Hull Museums Report.

Burton, J.J. 1913. The Cleveland Ironstone. Naturalist 1913, 161-168 + 185-194.

de Boer, F. 1964. Editorial. Bull. Hull Sci. & Field Nats. Club 2(8), 1.

Edwards, C.R. 1983. Collectors, Collections & Museums of Note. No. 40. Samuel Chadwick and the Geological Collections of the Malton Museums North Yorkshire, Geological Curator 3(8), 496-505.

Etchells-Butler, S.H., 1982. From matchbox to computer or the computerisation of the Phillip Cambridge Collection at the Sedgwick Museum. Geological Curator 3(5), 300-310.

Kent, P.E. & Casey, R. 1963. A Kimmeridgian Sandstone in North Lincolnshire. Proc. geol. Soc. London 1963, 57-62.

Owen, E.F., Rawson P.F. & Whitham F. 1968. The Carstone (Lower Cretaceous) of Melton, East Yorkshire, and its brachiopod fauna. Proc. Yorks. geol. Soc. 36, 513-524.

Owen, E.F. & Thurrell, R.G. 1968. British Neocomian Rhynchonelloid Brachiopods. Bull. Br. Mus. nat. Hist. (Geol.) 16, 101-123.

Penny, L.F. 1963. Vertebrate remains from Kelsay Hill, Burstwick and Keyingham. Hull Mus. Publs. 214, 5-14.

Rawson, P.F. 1975. Lower Cretaceous ammonites from north-east England: the Hauterivian heteromorph Aegocrioceras. Bull. Br. Mus. nat. Hist. (Geol.) 26, 131-159.

Sheppard, T. 1900. A descriptive catalogue of the specimens in the Mortimer Museum of Archaeology and Geology at Driffield. A Brown & Sons: London 82pp.

Sheppard, T. 1902. Remains of Ichthyosaurus thyreospondylus from the Kimeridge Clay of East Yorkshire. Hull Mus. Publs 10, 3-7.

Sheppard, T. 1911a. Prominent Yorkshire Workers: v. John Robert Mortimer. Naturalist 1911, 186-191.

Sheppard, T. 1911b. In Memoriam - J.R. Mortimer. Naturalist 1911, 329-330.

Sheppard, T. 1929. The Mortimer Collection of East Yorkshire Antiquities. Naturalist 1929, 365-368.

Sheppard, T. 1933. The Malton Museum and other geological collections. Naturalist 1933, 105-108.

Sheppard, T. & Drake, H.C. 1909. Catalogue of specimens in the Lether Collection and of the Cornbrash fossils in the Hull Museum. Hull Mus. Publs 58, 71-80.

Spath, L.F. 1925. Notes on Yorkshire Ammonites. Naturalist 1925, 137-141, 167-172, 201-206, 263-269, 299-306, 327-331, 359-364.

Spath, L.F. 1926. Notes on Yorkshire Ammonites. Naturalist 1926, 45-49, 137-140, 169-171, 265-268, 321-326.

Tresise, G.R. 1976. Geological Collections and Collectors of Note. No. 10. Merseyside County Museums. Geological Curator 1(6), 253-270.

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37. GEOLOGY AT STOKE-ON-TRENT MUSEUM AND ART GALLERY

by Don Steward.

Introduction

This article is a companion to that in B. C. G. Newsletter volume 3 part 6 (Halfpenny and Steward 1983) concerning the Natural History section at Stoke-on-Trent Museum and Art Gallery (hereafter referred to by the M. D. A. code - STKMG). The above mentioned includes a review of the history and staff of this section at the Museum and should be consulted to enhance the predominantly geological information that follows. Biographical notes refer to NAMED PERSONS.

History of Geological Collections, Curation and Personalities.

1686. Dr. Robert Plot, elected keeper of the Ashmolean Museum, Oxford in 1683 published the 'Natural History of Staffordshire' (Plot 1686). This contains the first mention of the geology of the area.

19th Century The locally influential North Staffordshire Naturalists Field Club was established in 1865 by the efforts of W. D. Spanton (N. S. N. F. C. and A. S. 1891, p. 10). It became the North Staffs Naturalists Field Club and Archaeological Society in 1877, but this name proved rather cumbersome and was altered to the North Staffordshire Field Club (henceforth N. S. F. C.) in 1897 (Spanton 1916). An important founder member was Dr. ROBERT GARNER who had written the 'Natural History of the County of Stafford' (Garner 1844) which included the first geological map of Staffordshire; he was also responsible for introducing geology to WILLIAM MOLYNEUX and JOHN WARD. Sir THOMAS WARDLE joined the N. S. F. C. in its first year and SAMUEL CARRINGTON led early field trips around the Wetton area. Greenwood (1888) listed the museum at Stoke-upon-Trent (established 1878) as having a geological and mineralogy collection of special local interest, this was probably based on Garners' collections (Garner 1886, N. S. N. F. C. and A. S. 1891, p. 50) although to confuse matters Spanton (1916) records that in the winter of 1872-73 a meeting of the N. S. F. C. was held at the Athenaeum, Stoke-upon-Trent "which contained the Museum formed chiefly by Garner who took a great personal interest in it". Again one can presume that this museum, possibly of a Mechanics Institute type, was the forerunner of the Stoke borough museum which occupied the same site on London Road. The then curator (1888), Alfred J. Caddie, apparently had little interest in natural history and the present collections do not contain any documentation which connects the 'Old Museum Stock' category of specimens with Garner or the Stoke-upon-Trent Museum. Unfortunately the reports of the Free Library and Museum Committee of Stoke-upon-Trent Corporation are no longer extant.

Early 20th Century In 1908 the N. S. F. C. and the Hanley Corporation agreed to the setting up of a display area for natural history in the Pall Mall premises of the Hanley Museum (N. S. F. C. 1908/09a). Basically the terms of the agreement were that the N. S. F. C. should provide and curate the specimens whilst the Museum provided the space. During this period the N. S. F. C. was very active geologically and some of the notable members were:- FREDERICK BARKE; WHEELTON HIND; JOHN T. STOBBS; and JOHN T. WATTISON. For the early years of the Hanley Museum the geological collections were cared for by these very competent, but non-curatorial, people. The majority of display specimens remained in the collection of the N. S. F. C. and the members of this Club often loaned specimens to the Museum for particular short-term displays. The Hanley Corporation collections consisted mainly of local Carboniferous Coal Measure plant fossils.

Mid 20th Century Federation of the six towns occurred in 1910, but it was World War II which finally brought an amalgamation of the collections contained within the several museums of the City. At the outbreak of war most of the collections were 'packed away to the country' and only Hanley Museum remained open with a much reduced display. At the end of the war Hanley Museum became the main museum and the only one with a permanent curatorial staff. Although it did not suffer war damage it was in a bad state of repair and a new museum, known as the City Museum and Art Gallery, Stoke-on-Trent, was built in 1956 (the first completely new local authority museum in the country to be constructed post-war). Interest in the geology displays appears to have decreased during this period, although it is worth noting that JOHN CHALLINOR and later JOHN MYERS were important members of the N. S. F. C. at this time and were doing valuable work in keeping geological interest alive in the area.

1970's - Present (1983)

This period has seen a long awaited expansion of Natural History (including geology) activities in the Museum, and is largely due to the energy and expertise of the Keeper, GEOFF HALFPENNY (appointed 1967). By 1970 the 'new' museum had become cramped and the bulk of the important geological specimens (including the John Ward collection of Carboniferous fish fossils - still technically belonging to the N. S. F. C. - and the Carboniferous Coal Measure plant fossils) had already, in the 1950's, been transferred to the Geology Department at Keele University. The Museum itself was closed from 1975 to 1978 to allow work on the enlarged premises to take place unhindered. 1978 was an eventful year with the appointment of the author, DON STEWARD (the first geologically trained member of staff in the history of the Museum); the transfer of all natural history specimens from the Staffordshire County Museum Service at Shugborough (where FRANK J. BEASLEY had built up a useful, and predominantly local, collection of geology specimens from 1966 - 1974); the return of the geological specimens from Keele University; and the ratification of the donation of specimens from the N. S. F. C. to the Museum. Thus the collections were now all together in one purpose-built store and the task of cataloguing the specimens could begin (See Storage section). A major project from 1978 to 1981 was the planning and construction of the Natural History gallery. This was completed for the official opening of the Museum by H. R. H. The Prince of Wales on 3rd June 1981 and we in this section feel that the gallery was a major contribution to the winning of the Museum of the Year award in 1982. The Museum was designated the Geological Records Centre for Staffordshire in 1979 (succeeding Shugborough Museum in this role) and subsequent efforts have been made to build up the site and associated literature records for this area. 1982-83 saw the inclusion of geologists to help in a Museum based environmental survey of Stoke-on-Trent financed by the Manpower Services Commission. This project sorted through locally available data and produced a series of publications about the geology of Stoke-on-Trent as well as a guide to building and ornamental stones found within the City.

Display

The Natural History Gallery

This gallery has been reviewed by Stansfield (1981) and Halfpenny and Steward (1982).

(a) Introductory area (120 sq. m.)
This consists of a display or rocks, minerals, fossils, plants and animals which portray the variety of forms encompassed by the term Natural History; a changeable exhibit that usually depicts the work of the section; and

outlines of Staffordshire showing assorted physiographical and geographical information. The last section also contains an audio-visual unit which amplifies the contrasting features to be found in the landscape of the County.

Geology in the introductory area is represented by assorted examples of rocks, minerals and fossils; examples of specimens and their mode of acquisition; general Staffordshire geology including mineral resources; a geological column; and an explanation, with wire logs, sections and core samples, of how coal reserves are proven.

(b) Habitat area (300 sq. m.)
All aspects of Natural History are integrated in this section that deals with local habitats. Fortunately land use in Staffordshire predominantly reflects the underlying strata and only a small amount of poetic licence is required to divide the gallery. The habitats and their related rocks are:-

Limestone Grassland	-	Carboniferous Limestone
Moorland	-	Namurian sandstones and shales.
Urban	-	Westphalian
Deciduous Woodland)	-	assorted horizons
Coniferous Woodland)	-	
Heathland	-	Lower Triassic ('Bunter')
Field and Hedgerow	-	Upper Triassic ('Keuper')
Aquatic Areas	-	Quaternary

The arrangement works well. It has the advantage that the gallery can be approximately set out as if it were a walk from the north east to the south of the County, and it also follows the geological time scale by starting with our oldest exposed rocks and leading sequentially through to the Quaternary. This last section is appropriately situated near the entrance to the Archaeology gallery. Each habitat has a single, uniform, information board which describes, in turn, how, when and under what conditions the strata were laid down, their resource value, the effect of weathering, the soils produced, the plants that prefer those soil types, and the associated animals.

Cases containing geological specimens within the various habitat areas show relevant rock types, fossils and minerals. In the Urban area a larger case is devoted, on one side, to the collecting of John Ward and includes some of his best fish fossils, and on the other, to a glass painting depicting a hypothetical scene from the Carboniferous Coal Measure Swamps. Relatively few geological specimens are displayed (circa 100) in the gallery. This was in accord with an early policy decision to present the very basic number of rock and fossil examples found in the area to the public. The idea was to stimulate further interest in the natural history of the area by giving a 'taster' of what is present without confusing the issue by presenting rank upon rank of specimens. The increase in specimens brought in for identification has justified this approach to some extent, but remarks from more committed geologists that there are not enough specimens on display have been noted with a view to the preparation of new displays once the 'life span' of the current gallery is over.

Other Areas of the Museum

A link area with the Archaeology gallery has a graphically orientated display of evolutionary lines starting in the Precambrian and ending with the evolution of man. Photographs of geological thin sections are used in the main Archaeology gallery to show the petrology of stone axes. The ores of elements used to give various glaze colours are exhibited alongside suitable pottery in the Ceramics Technical gallery. Unfashioned semi-precious stones accompany several ornaments in the Decorative Arts gallery.

The outside of the Museum is partially clad in porphyritic dacite and markfieldite, both from Charnwood Forest, whilst the internal stairwalls have 'Roman Cream' Travertine walls and Burlington slate stair treads from the Silurian of the Lake District (Branney 1983). The plaque commemorating the official opening is Welsh slate, but the Museums Association accreditation plaque, which resembles marble, is in fact plastic.

Temporary Exhibitions

The Museum has two galleries which are available for interdisciplinary temporary exhibitions. So far geologically biased exhibitions have included:-

Geological Conservation (N. C. C.);
North Midlands Minerals, The Sarjeant Collection (internal);
A Young Persons' Guide to Geology (Manchester Museum);
Britain's Oil and Gas (West Midlands Area Museum Service);

Individual display cases and small displays can be mounted in the main Natural History gallery to promote sectional schemes; one has been to advertise a publication on the 'Ornamental and Building Stones of Stoke-on-Trent'.

Geological Records Centre

STKMG is the designated records centre for Staffordshire. At the end of 1982 a total or 608 records were held, although 94 of these were for the West Midlands county - being retained until a records centre is designated for that area. The distribution of the records is biased towards the fact that Stoke is in the north of Staffordshire, however a very useful contribution has been made by members of the Black Country Geological Society recording unit at the southern limits of the area. The scheme has during 1982-83 also gained information from a Museum based C. E. P. team undertaking an environmental survey of Stoke-on-Trent.

As well as site records the centre is in the process of building up a comprehensive literature reference collection of geological publications to do with the rocks and fossils of the area. After starting with practically no material in 1978, the Museum now houses a very respectable collection of reprints. If, however, any museum or other institution has duplicate maps, documents, or literature relating to the Carboniferous/Triassic flora, fauna and stratigraphy of Staffordshire using up valuable storage space, we would be pleased to provide a new home for them! Photographic material, historical and contemporary, is also collected to provide a visual record of sites at particular dates.

Usage of the records is not as great as we would like, mainly because of lack of publicity for the scheme (a Catch 22 - there is no point advertising the scheme until sufficient records are available, but potential enquiries and information do not reach the scheme as few people know about it). However there has been a growing interest in the data, particularly by representatives of Staffordshire County Council who now appreciate that existing geological features, such as disused quarries, can be incorporated at comparatively little expense into natural history conservation schemes on land reclamation sites.

Publications

Single copies of the following are available from the Museum Shop at the prices quoted. Postage and packing 25p. extra.

North Midland Minerals, the Sarjeant Collection. Steward, D. I. 1980. Collections of the City Museum and Art Gallery, Stoke-on-Trent No. 1.
ISSN 0144 - 3267 60p.

The Ornamental and Building Stones of Stoke-on-Trent. Branney, M.J. 1933.
Staffordshire Geological Recording Scheme Publication No. 1.
ISSN 0264 - 6331
ISBN 0 905080 23 8 £1.50

A Complete Geology of Stoke-on-Trent.

1. Fossils
   Hazel Clark 1983 30p.

2. Geologists
   Kerris Bentley 1983 20p.

3. History of Industry: Coal
   Shirley Harrison 20p.

4. History of Industry: Iron and Steel
   Shirley Harrison 1933 Available soon

5. History of Industry: Pottery
   Shirley Harrison 1983 Available soon

6. Solid Geology
   Sharon Rayment 1983 30p.

7. Quaternary History
   Hazel Clark 1983 20p.

8. Environment
   Kerry McDade 1983 30p.

Collections Policy

The Museum has a written statement of acquisitions policy and this is available upon request. It is a generalised statement; the implied meaning of this with regards to geology is as follows and is the informal arrangement that has been adhered to by the Natural History Section since 1978. Priorities are:-

1) Staffordshire material, data and photographs;
2) Carboniferous and Triassic specimens for comparison with Staffordshire material;
3) minerals to complement the Sarjeant Collection;
4) examples of ornamental and building stones used in the area; and
5) typical geological material suitable for school loans and display purposes.

(N. B. :- The area defined as Staffordshire is the post-1974 reorganisation boundary and includes the Staffordshire part of the Peak District.)

This informal arrangement was formulated to complement the existing strength of the geological collections. It is a continuation of the original 1903 brief of the North Staffordshire Natural History Museum which stated, with an unusually parochial attitude for that era, the following:-

"The Committee also came to the wise decision that the museum should mainly comprise of exhibits relative to Staffordshire, and that it should be made as representative as possible of the flora, fauna and geology of the County" (N. S F. C. 1903/09a).
A similar policy was also followed by Frank Beasley at Shugborough Museum and the majority of material transferred from there was collected in the County. (N. B. :- The area defined as Staffordshire by these two bodies was the pre-1974 reorganisation boundaries and included parts of the current West Midlands Metropolitan County. By some strange twist of fate the area removed post-1974 contained all the exposures of Silurian strata.)

The collections at the Museum do not contain any holotype material. We would recommend to the prospective donor of this sort of material that it first be offered to a National museum. In the unlikely event that we discover any holotype material in our present collections it is probable that we would recommend to the Director and Museums Committee that such material be offered to the relevant National museum.

Uncommon specimens from outside Staffordshire when offered to the Museum are, with the owners consent, brought to the attention of the relevant local museum to give them 'first refusal'. A recent example of this was an unusual Carboniferous brittle star found in South Wales by a Staffordshire naturalist; this specimen was transferred to the National Museum of Wales, despite this Museum not having an example, as it proved to be one from 'their area' that they did not possess.

Storage, Cataloguing and Conservation

Storage.

The geology store consists of a 17 bay wooden Remploy roller-racking system which contains adjustable shelving (Halfpenny and Steward 1982). Space is available for an extra 6 bays, but at present the storage capacity is well above that needed to house the specimens comfortably. Specimens and their labels are individually housed in appropriately sized white card trays (1), which are in turn contained within larger, lidded cardboard boxes (2). These boxes are arranged systematically within the storage space. Specimens that are too large to fit into the boxes are situated on shelves at one end of the roller-racking system. The Museum air-conditioning system controls the relative humidity at less than 55% and the Natural History stores area has an extra-fine dust filter that removes practically all the suspended material from the incoming air. Ideally wooden boxes would have been preferred for their greater strength, but these proved to be too expensive and limiting the size of the cardboard boxes has overcome the rigidity problem. It also means that you cannot fill a box so full of specimens that it is too heavy to move!

Only two collections are retained as separate entities; these are the W. A. S. Sarjeant North Midland Mineral Collection and the John Ward Carboniferous Fossil Fish Collection. The remaining specimens are housed in one of three general collections which are Fossils, Minerals and Rocks. The Fossil collection is initially divided into stratigraphic periods and within these groups into taxonomic divisions. The Mineral collection is sorted according to the Hey classification (Hey 1975). The Rock collection is in stratigraphic order (see table) and is subdivided into rock-types. Building stones, metamorphic and igneous rocks are included as appendages to the Rock collection. The subdivision of this collection is not uniform at present and it is likely that it will be revised along the lines of the I. G. S. computer coding system (Harrison and Sabine 1970) as used at Merseyside County Museums. As yet unregistered material is housed at the end of the store until such time is available to incorporate it; most of this material is from the collections of Shugborough Museum and has a catalogue so that material is easily available if required.

Notes

1) White card trays, sizes used (in inches):- 3 x 2 x 1; 4 x 3 x 1; 6 x 4 x 1; 8 x 6 x 1. Supplied by S. E. Milbourne Ltd., Cardboard Box and Carton Manufacturers, Jaycee Works, Arcola Street, Stoke Newington Road, London E8 (01-254-3491).
2) Lidded cardboard boxes (.060 Kraft Lined Chipboard), sizes used (in inches):- $12\frac{1}{2}$ x $12\frac{1}{2}$ x $6\frac{1}{2}$; $12\frac{1}{2}$ x $12\frac{1}{2}$ x 3. Supplied by E. Lakin and Co. Ltd., 201-205, Barford Street, Birmingham B5 7ES.

Cataloguing

In 1978 the accessioning of new material was carried out on the basis that all objects were given their own number as they were acquired by the Museum. This system was seen to be progressively unacceptable as the involvement in gallery preparation work became more demanding and a backlog of unaccessioned items would soon build up. A system, based on that used at Bristol Museum, was therefore adopted. Problems with the old system were already showing through as some of the material originating from old collections of museums in Stoke-on-Trent was not recorded as being accessioned, and with the imminent arrival of about 3,000 specimens from Shugborough Museum the new, more flexible system, had to be introduced.

When a collection of any size is accepted by the section it is given an accession number; details of the vendor/donor, the nature of the collection, and the origin of the collection are noted in the accession book. The name of the vendor/donor, the accession number, and the nature of the collection is entered on to a vendor/donor card index. For a larger collection duplicated labels with the name of the vendor/donor and the accession number are placed with all the specimens of that collection.

The next step is to give a specimen an individual number - a registration number. The subject of Natural History has been arbitarily divided into five categories for ease of identification and each group has its own letter prefix. These groups are:- botany (prefix B); fossils (F); geology - meaning rocks and minerals (G); photographic material (P); and zoology (Z). Each group has its own registration book. Details of the name of the specimen, its locality, accession number, donor, horizon, and any other remarks are logged and each specimen therefore has its own unique number. This information is also written on a card accompanying the specimen and the registration number is affixed to the specimen by some method. This generally means writing the number in permanent ink on to a white paint mark, or more recently the much faster-drying typing correction fluid such as 'Snopake' or 'Liquid Paper' (Cross 1979), and covering this number with polyurethane varnish to prevent it rubbing off. The registration number is entered into the accession book alongside the relevant collection entry so that a cross reference is available. Specimen data is also transferred on to the relevant subject holdings card which gives a quick reference to the total number of related specimens and their storage localities. A numbering system in the stores allows for the storage locality to be pinpointed and also simplifies the return of material temporarily taken out of storage. This latter task is also aided by the use of slips put in the place of removed items, stating the date and reason for removal etc.

The great advantage of the system is that the accession book gives a record of the presence of a collection and is easily kept up-tp-date. The registration of specimens can be done whenever there is time available and valuable items in a collection can be registered immediately. All the specimens will be eventually registered (hopefully). The next proposed cataloguing exercise will be the completion of computer compatible cards (M. D. A.) by a Manpower Services project (starting October 1983), the existing registration system should lend itself to speedy filling-in of these cards.

Conservation

Polyvinyl acetate powder dissolved in acetone (at a ration of about 1:5 to give a solution with the consistency of vegetable oil) is the medium which is used in the strengthening of the material in the geology collections. This method has been adopted in general use as it provides a quick drying non-toxic, clear adhesive which bonds the surface and subsurface layers of the material. This protective layer can be removed by washing with acetone if necessary, but it is resistant to water. If applied carefully the solution does not leave a gloss finish and so can be used to bond shales without leaving an obvious 'wet-look'. It can also be used on sandstones to prevent crumbling and is safe to use on osteological material. I have found it particularly useful in consolidating friable material from the local Coal Measures. For deeper penetration of porous material the specimen may be immersed for short periods in the solution in a desiccator which is connected to a vacuum system.

Very bad cases of pyrite decay, found in some specimens housed in the old museum, have been neutralised with ammonia and coated in P. V. A. solution for consolidation. The relative humidity of the stores is about 55%, but to ensure that the micro-climate in particular boxes is kept dry silica gel has been placed, and is regularly checked, in those containing water susceptible material such as halite, pyrite and marcasite (Howie 1978).

From a personnel conservation point of view, prompted by a Geological Curator article (Henderson 1982), the radiation emitted by the very small collection of radioactive minerals has been measured. Dose equivalents of 2.1 microsieverts/hour were recorded by Mr. Maurice Hawkins, Dept. of Chemistry at North Staffordshire Polytechnic, for the specimen of pitchblende on display and for the few radioactive specimens in store. These values are well below the government code maximum of 5.0 microsieverts/hour and once surrounded (in the first case) by air and perspex, and (in the latter) by air and cardboard, were not significantly above background level. The specimens we have would appear to be relatively safe although precautions have to be taken not to inhale ionised air when opening a box.

Collections

The Geological collections at Stoke are comparatively small (Circa 8,000 specimens) but are particularly useful in the context of this local museum as they are predominantly Staffordshire in origin.

Fossils

Approximately 60% of the specimens we hold are fossils, and of these 72% are invertebrates, 14% are plants and 14% are vertebrates. About 54% of the fossils are Carboniferous in origin. Only one collection is housed as a unit, this is the John Ward collection, the rest of the material is contained within the general collection of the Museum.

JOHN WARD. The Carboniferous Coal Measure fish fossils number 554 items and consists of 339 individual teeth with the remaining specimens ranging from scales and spines to complete fish outlines. Nearly all the specimens are from the Potteries coalfield. A detailed catalogue is available on request.

MALCOLM COX. Approximately 2,000 invertebrate fossils were donated to the Museum in 1980 (acc. no. 7/NH/1980)

on the understanding that material more appropriate to other institutions could be transferred if necessary. The bulk of the Carboniferous material has been registered and the remaining specimens, mainly Ordovician and Mesozoic invertebrates will be sorted in the future.

SHUGBOROUGH MUSEUM FOSSILS. Circa 1,500 specimens. Mainly Carboniferous material collected by Frank Beasley. The majority of the Carboniferous specimens have been registered and include invertebrate specimens collected by Prof. W. A. S. Sarjeant from the Lower Carboniferous of the north Midlands. Also contained are the collections of the South Staffordshire Naturalists Society; Capt. J. A. Best; and F. A. Barnett.

FREDERICK BARKE. Labels bearing his name have definitely identified 20 specimens from this collection. These are Coal Measure plant fossils from North Stafford shire, with a few from Somerset. This collection belonged to the N. S. F. C. until 1978 and is not that donated to the Museum in 1935 (see later, acc. no. 197'35).

ROSEMARY CRANE. 35 fossils and rocks from the Lower Carboniferous limestone of the Alstonfield area of Staffordshire (29/NH/1979). Associated maps and documents complement this collection (47/NH/1980).

JOHN T. WATTISON. Circa 175 Namurian fossils from Congleton Edge, nr. Mow Cop, Staffordshire (27/NH/1979). Donated by E. A. Watkin who received them from J. T. W. in 1960.

STKMG FOSSILS. Circa 1,400 specimens and includes small donations to the Museum of the years. Includes the Hanley Corporation collection of Potteries coalfield plant fossils.

WILLIAM QUAYLE. 68 specimens of Carboniferous Coal Measure fish teeth and scales collected from the Cheadle (Staffs) coalfield (21/NH/1982).

CHRISTOPHER EARDLEY. About 30 specimens brought in at various times, with several good specimens of local coalfield fish fossils.

WHEELTON HIND. Only one specimen (with his name on it) has been identified (see acc. no. 744'47).

Minerals and Rocks

The total number of specimens is just above 2,500 of which 42% have been registered. The W. A. S. Sarjeant collection is the only one kept separately. The minerals are in a separate section to the rocks, which, apart from a very small number of igneous and metamorphic rocks and building stones, are housed stratigraphically (see stratigraphical classification table).

W. A. S. SARJEANT. 930 specimens of North Midland Minerals transferred to STKMG from Shugborough Museum in 1978. It is a good reference collection from sites which were extant between 1953 and 1970. Associated collectors include Harold Sarjeant and Leslie O. Ford.

STKMG MINERALS. 475 specimens variously acquired by the Museum which give a reasonable range of common British minerals.

STKMG ROCKS. 390 specimens, predominantly from Staffordshire horizons.

SHUGBOROUGH MUSEUM ROCKS and MINERALS. About 750 specimens remain to be registered and included in the STKMG collections. F. J. Beasley again the main collector, particularly of the Staffordshire material.

JOHN CHALLINOR. 16 geological maps of Stoke-on-Trent and Staffordshire dating from 1852-1910 plus a number of reprints relating to local geology. Seven of the maps at one time belonged to Sir Thomas Wardle of Leek.

LICHFIELD CITY LIBRARY AND MUSEUM. This collection is on loan to the Museum. It was rescued from the Lichfield Library basement by Frank Beasley in 1969 and was transferred to Stoke in 1978. It contains about 500 minerals of World wide origin and is stored as a unit; the specimens are not included in the total STKMG holdings. Some specimens were collected before 1874 and could have been viewed by S. G. Perceval when he visited Lichfield (Thackray 1981).

Untraced Collections

This following list has been compiled from Greenwood (1888), N. S. F. C. (1908/9a), Bemrose (1936), Sarjeant (1971), and from Museum accession cards. What has happened to these collections is a mystery. The Potteries were not badly damaged during World War II so that is no excuse, indeed one important collection was received after the war! The only explanation is that at some stage a quantity of 'old rocks' was misplaced (to be polite) by a non-geologically trained worthy who thought the collection was taking up too much space. Specimens may be in the present collections but the lack of data labels on some 'Old Museum Stock' makes identification virtually impossible.

Geological and mineralogy collections ? of local interest, Stoke-upon-Trent Museum (Greenwood 1888).

* Several Coal Measure fossils given by Dr. WHEELTON HIND (N. S. F. C. 1908/09a).

A large and varied display of fossil mollusca from the limestones of Froghall, Cauldon Lowe, Thorpe Cloud, Dovedale and other localities, the property of Hanley Corporation (N. S. F. C. 1908/09a, Bemrose 1936).

* An interesting collection of fossils from a grave pit at Rosehill, Cheadle, collected and exhibited by MR. J. R. B. MASEFIELD (N. S. F. C. 1908/09a, Bemrose 1936).

* A fairly representative display of fossils of the Silurian system shown by Mr. J. T. WATTISON of Cobridge (N. S. F. C. 1908/09a).

At least three fossil footprints from the Triassic at Hollington, Staffordshire collected by HENRY C. BEASLEY (Sarjeant 1971, possibly referred to by Bemrose 1936).

110 Carboniferous Limestone fossils presented by MR. F. BARKE, Market Drayton (acc. no. 197'35). This collection included specimens described by Kidston, Hind and other in various monographs (Scott 1938/39).

Collection of fossils, mostly from Staffordshire and Derbyshire bequeathed by A. Tonkinson of Stoke. An earnest working man geologist. Presented by his son Mr. Tonkinson, Buxton Street, Sneyd Green, Hanley. Arranged and labelled by J. T. Wattison of Shrewsbury, March 1941 (acc. no. 503'41).

Collection of fossils, many of local provenance, formed by the late Dr. WHEELTON HIND. Presented by his daughter and son-in-law (acc. no. 744'47).

BIOGRAPHICAL NOTES

BARKE, FREDERICK (30.11.1842 - 3.12.1938)

Born at Shifnal, Shropshire, he spent most of his working

* Note: These collections may only have been on loan to the Museum for display purposes.

life as the manager of a firm of public works contractors. He joined the N. S. F. C. in 1876 and was chairman of the geology section from 1892 until 1929. His business led him to a particular interest in the Drift deposits of North Staffordshire, but he also amassed a useful collection of local Carboniferous fossils which was donated to Hanley Corporation in 1935. Early, around 1925, he donated several Carboniferous Coal Measure plant fossils to the N. S. F. C. Museum, most of which were identifiable when this material was donated to STKMG in 1978. (For obituary see Scott 1938/39).

BEASLEY, FRANK J.

Frank was keeper of geology and natural history at the Staffordshire County Museum Shugborough from ? 1965 - 1978. He entered the museum profession with a degree in English, but soon undertook the study of the geology and natural history of the area. From practically nothing he built up a very useful local geology collection which was transferred to STKMG in 1978. By 1978 Frank had become weary of the intrigues of the museum profession and started a laudable career as a nurse to the mentally disturbed.

BEASLEY, HENRY CHARLES (1836 - 17.12.1919)

An avid collector of Triassic vertebrate footprints. He visited Staffordshire sites on many occasions, mainly Townhead Quarry, Alton, and the Hollington Quarries. 70 of his specimens went to Merseyside County Museums but were destroyed during World War II (Tresise 1976, Hancock and Pettitt 1981).

CARRINGTON, SAMUEL (1798 - 1870)

Reference to the history of this ardent fossil collector have appeared in a series of collector notes in the Geological Curator (see Zoetewecj 1979; Cleevely 1980; Steward 1980b). Carrington was a school master at Wetton and "although of humble life and far removed from Museums and Libraries of Reference, he acquired a large amount of scientific knowledge and was an acknowledged authority on Carboniferous Limestone fossils" (Ward 1893, pp. 77-78). He continued his activities until his death and Spanton (1916, p. 21) records that on an 1870 summer excursion to the Manifold Valley near Wetton, members of the N. S. F. C. found Carrington "at work on the floor of a small cavern, where some bones were found". At a Leek meeting of the N. S. F. C. in early 1870 Carrington presented a list of 676 species of limestone fossils he had found "exclusive of varieties and many unnamed specimens" (Wardle 1873, p. 33). He was also an active archaeologist and is credited with opening 114 barrows in Staffordshire and Derbyshire, and in excavating limestone caves notably Thor's Cave, Manifold Valley (Spanton 1916, p. 7). The B. G. S. hold a large Carrington collection (about 2,200 species) purchased for £21 on 15.12.1870. Other collections are, or have been, at Passmore Edwards Museum, Wollaton Hall Museum Nottingham, and museums at Paris (Spanton 1916, p. 23). As he was a purveyor of specimens it would be reasonable to assume that a number of Carboniferous limestone fossil collections assembled in the mid 19th Century would contain some Carrington material; the research in progress noted for Tim Riley of Sheffield City Museums (Torrens 1933) would suggest that there is some material at that museum.

CHALLINOR, JOHN (30.11.1894 - present)

John Challinor was born near Leek, Staffordshire, the son of William Edward Challinor, a former president of the N. S. F. C.. He became a lecturer at University College of Wales, Aberystwyth in 1919 and remained there until retirement in 1961. Noted for geological literature research, rather than collecting, he is still actively engaged in publications (Torrens 1983).

COX, MALCOLM D.

As well as donating his lepidoptera collection to the Museum (Halfpenny and Steward 1983) this locally born naturalist, the nephew of J. T. Wattison, also presented his geological collection. He retains an interest in natural history literature and has an impressive library of antiquarian books.

CRANE, ROSEMARY H. B (1952 - present)

Rosi Crane, nee Jakes, developed an interest for geology circa 1970 whilst attending Sheffield University and the collection we have was accumulated then during a B. Sc. field mapping project. She now works for The Natural History Unit of the B. B. C. at Bristol and is married to Dr. Michael Crane, assistant keeper of geology at Bristol Museum.

EARDLEY, CHRISTOPHER

A present day collector who has developed an interest for Carboniferous fish fossils. Whilst unemployed he scoured the local colliery tips and private mines for fossils and since regaining work has bought a home computer on which to catalogue his collection of over 250 specimens. He has donated several of his rarer specimens to the B. M. (N. H.).

GARNER, R. Dr. (4.3.1808 - 1890)

He was known as the father of the N. S. F. C. as he was the 'elder statesman' of the group and greatly influenced other members because of his unrivalled knowledge of the natural history of the district; W. D. Spanton, the actual founder of the N. S. F. C. resented Garner being given this accolade and often expressed the view that Garner was somewhat pessimistic about the future of the Club when it was formed in 1865 (McAldowie 1922/23). Garner was a medical man, born at Lane End, Longton, trained at London University, and working most of his life at the Infirmary and Workhouse at Stoke-upon-Trent. As mentioned he was a collector of specimens and these formed the basis of the 'Garner' Museum at Stoke-upon-Trent. He wrote many articles, mainly on medicine, and his greatest achievement was the compilation of the 'Natural History of the County of Stafford' in 1844. (For autobiography see Garner 1886).

HALFPENNY, GEOFFREY (2.2.1949 - present)

Geoff joined the Museum staff immediately from High School (1.10.1967) as museum assistant (Natural History) although expected to undertake other museum duties. He was appointed Keeper of Natural History in April, 1978. His main interests are bats and insects, but has, by his great enthusiasm and expertise, resurrected all aspects of natural history in the Museum.

HIND, WHEELTON Dr. (2.11.1859 - 21.6.1920)

Born in Roxeth, Harrow, he moved to Stoke in 1884 as a surgeon at the North Staffordshire Royal Infirmary. He is noted for many publications, including a monograph on Carbonicola, Anthracomya and Naiadites (Hind 1894 - 1896), and was secretary for the 'Life zones in the British Association for the Advancement of Science' (1899 - 1907). He collected a lot of material, including type specimens, which were purchased by the Trustees of the British Museum (N. S. F. C. 1920/21). Duplicate Hind material appears to have been donated to various museums by the B. M. (N. H.) in 1924 (Hancock and Pettitt 1981). (For obituary see N. S. F. C. 1920/21).

Wheelton Hind

Dr. Wheelton Hind 1859 - 1920

MASEFIELD, JOHN RICHARD BEECH (11.3.1850 - 16.2.1932)

Mainly noted for his interest in molluscs (Halfpenny and Steward 1983) J.R.B. Masefield also had a much wider interest in natural history. He was a key member of the N.S.F.C. and served on their museums committee for many years. His mollusc collection purchased by STKMG in 1932 contained several unlabelled Carboniferous bivalves, and he also made a collection of material from the Triassic gravel pits near his house at Cheadle, Staffs. (For obituary see N.S.F.C. 1931/32).

MOLYNEUX, WILLIAM (22.5.1824 - 24.10.1882)

Born in Nuneham Courtnay, Oxfordshire to a family 'not possessing the advantages which wealth and position bestow' he moved to Trentham in 1854 and soon found employment as a porter at Trentham Gardens. At first he was interested in archaeology; this led him to meet R. Garner who then inspired him to take up geology. He was well known to local workmen at rock exposures, who, because of the difficulty in prouncing his name, called him 'the Curiosity Man'. His main interests were Triassic pebble beds and Carboniferous Coal Measure fish, this latter one producing amiable competition for John Ward. In 1860 he moved to Stafford and around this time he sold his fossil fish collection to the Museum of Practical Geology, Jermyn Street, London. He continued his interest in geology and gave several talks to the N.S.F.C. during its first years after formation; he also constantly moved around the west Midlands in an attempt to find employment to his liking. Early in 1880 he left England for Natal and eventually gained employment surveying and reporting on the geology of the Karroo and Stormberg. A severe cold, which resulted in fever and dysentry, caused his death at Durban on 24th October 1882; he left a wife and eleven children. (For the Obituary see Ward 1883).

MYERS, JOHN (12.2.1903 - present)

John Myers has been teaching in North Staffordshire since 1927 and could be termed the present 'father of geology' for this area. Although not possessing a personal collection he has contributed greatly to local geology. Since 1950 he has written the sectional reports for the N.S.F.C. and in 1948 he founded the North Staffordshire Group of the Geologist's Association. He is particularly noted for his find of Anthraconauta tenuis (specimen now with the I.G.S.) which established the base of the Newcastle Formation as being the base of Westphalian D. He retired in 1967 but has remained an active influence in local geology.

QUAYLE, WILLIAM

Currently living in Southampton, this collector visited STKMG to see if we had any useful Mesozoic arthropod material, his main interest. As it turned out we did not possess any suitable material, but he was impressed with the Carboniferous fish collection and agreed to donate the specimens that he had collected from colliery tips in the Cheadle (Staffs) coalfield.

SARJEANT, WILLIAM ANTHONY SWITHIN (15.7.1935 - present)

Born and educated in Sheffield, Bill Sarjeant developed an interest in geology at an early age and was elected on to the committee of the Sorby Natural History Society whilst still a teenager. After completing his Ph.D. he moved through several temporary jobs before obtaining the post of assistant lecturer in geology at Nottingham University in January 1963. He remained there until 1972 when he moved to the University of Saskatchewan in Canada, where, in 1976, he became Professor of Geology. He has made important contributions to geology and was a founder member of both the Peak District Mines Historical Society and the East Midlands Geological Society. His prolific writings cover many aspects of geology from micropalaentology through vertebrate trace fossils to minerals of the Peak District. The collection of minerals, and some fossils, was assembled by W.A.S.S. between 1953 and 1970 with the help of his late father, Harold and Mr. Leslie O. Ford. This Museum is justifiably pleased to have this important reference collection of North Midlands Minerals (Steward 1980a).

STEWARD, DONALD IAN (11.4.1951 - present)

Although born in Beeston near Nottingham he spent most of his early and school years at Mansfield. From 1969 to 1977 he gained various degrees and work experience at Reading University, Southampton University and City of London Polytechnic. In March 1977 he was appointed as museum assistant (geology and natural history) at Bristol Museum, from where he moved to STKMG as assistant keeper of natural history in July 1978. He does not keep a personal collection but has contributed specimens to the Museum when suitable material has been found locally.

STOBBS, JOHN T. (1865 - 1942)

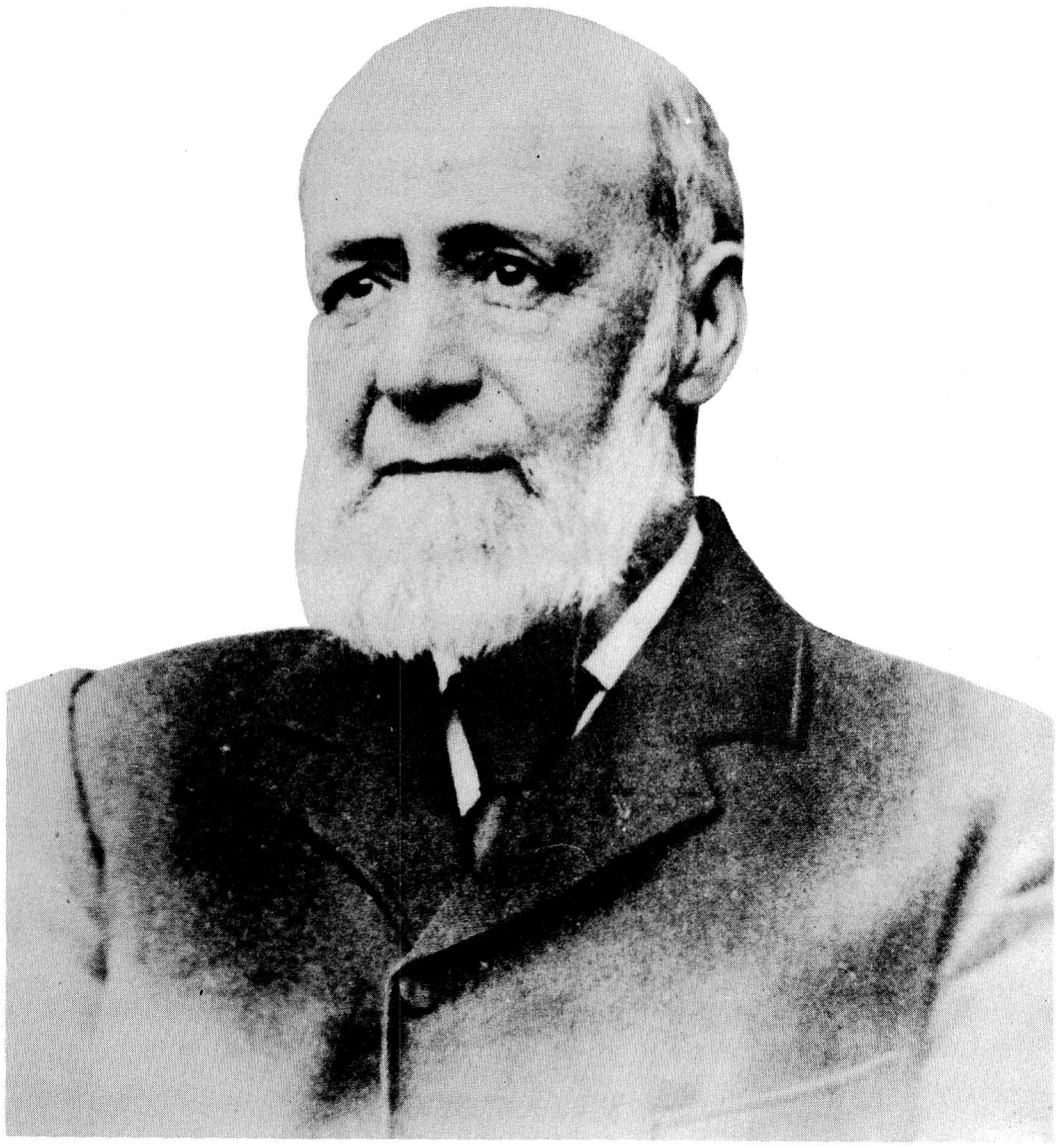
A native of Allendale, Northumberland, he moved to take charge of mining instruction at the North Staffs Mining Institute (now North Staffs. Polytechnic) in 1898 after graduating at the College of Physical Science, Newcastle-upon-Tyne and spending some time in mine management in N.E. England and Australia. His particular interest was Carboniferous Coal Measure geology and he collected many specimens - all of which were apparently destroyed as requested in his will (pers. comm. Mr. E.A. Watkin, N.S.F.C. member), although Whitehead and Pocock (1947) do note that specimens collected by J.T.S. were at the Geological Survey Museum. The full context of the geological work of J.T. Stobbs, and his association with John Ward and particularly Wheelton Hind, is admirably reviewed by Myers (1951/52).

WARD, JOHN (11.8.1837 - 30.11.1906)

John Ward was born in Fenton, educated locally and followed his grandfathers' trade of drapery when setting up business at Stafford Street, Longton. At the same time he was employed in the offices of Lane End Colliery. As a boy he was greatly influenced by Robert Garner and studied geology; his work at the colliery afforded many opportunities for such study. He became a world renowned palaeontologist whose name will always be associated with a remarkable collection of Carboniferous fossil fish obtained from the Potteries Coalfield. The bulk of the collection, including type material, was purchased by the B.M. (N.H.) but other institutions, including the Royal Scottish Museum, Leicester Museum and the Manchester Museum, have material collected by him. His personal collection was divided between the N.S.F.C. (this Museum's collection) and the local Mining Institute (now the North Staffs. Polytechnic). (N.S.F.C. 1907/08, N.S.F.C. 1908/09a). (For Obituary see N.S.F.C. 1906/07).

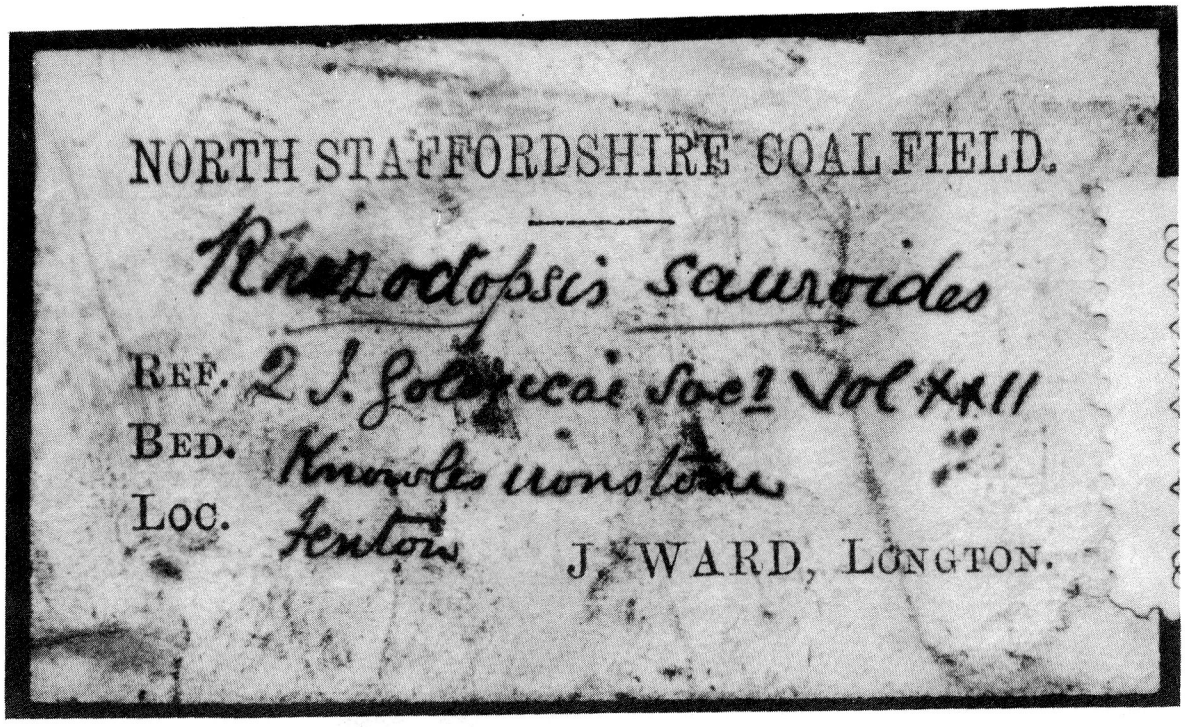
WARDLE, THOMAS, Sir (26.1.1831 - 3.1.1909)

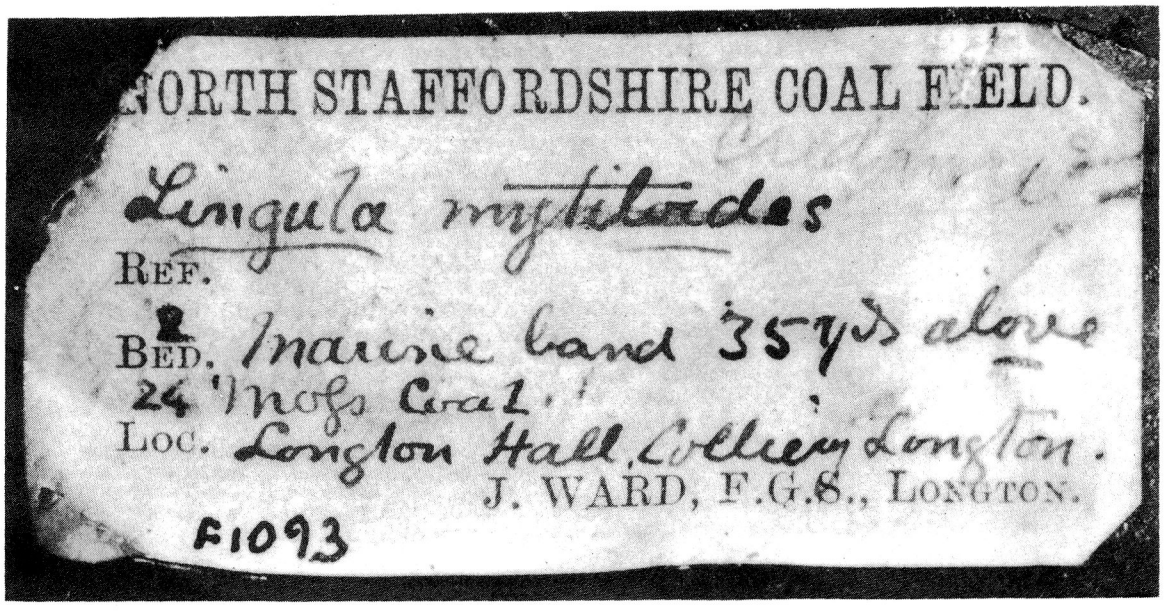
Born in Macclesfield, Sir Thomas Wardle became famous and was honoured with a knighthood for his work in the silk industry at Leek. His works produced early William Morris and, later, Liberty prints which revolutionised the taste of the public in the decoration of their homes. In addition to his active business career he also found time to devote his attention to geology. He lived in Leek, but had a country residence at Swainsley, near Wetton, on the banks of the



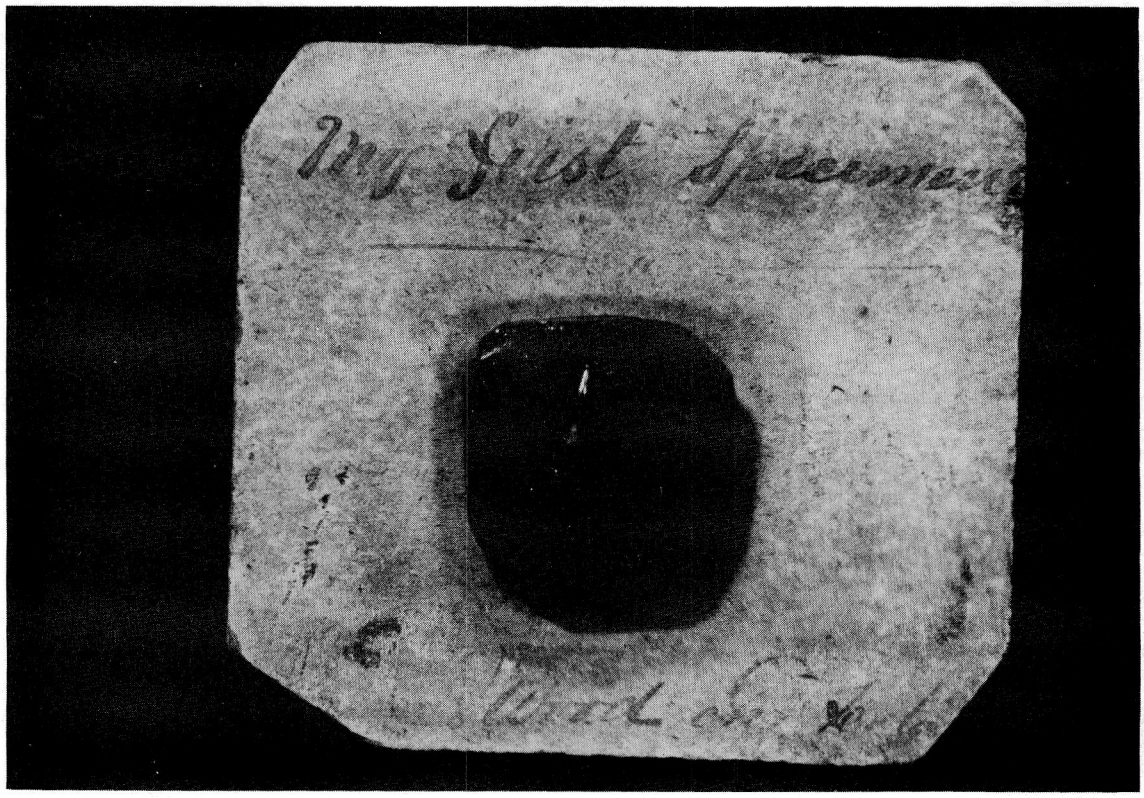
Yours Truly
John Ward

John Ward 1837 - 1906



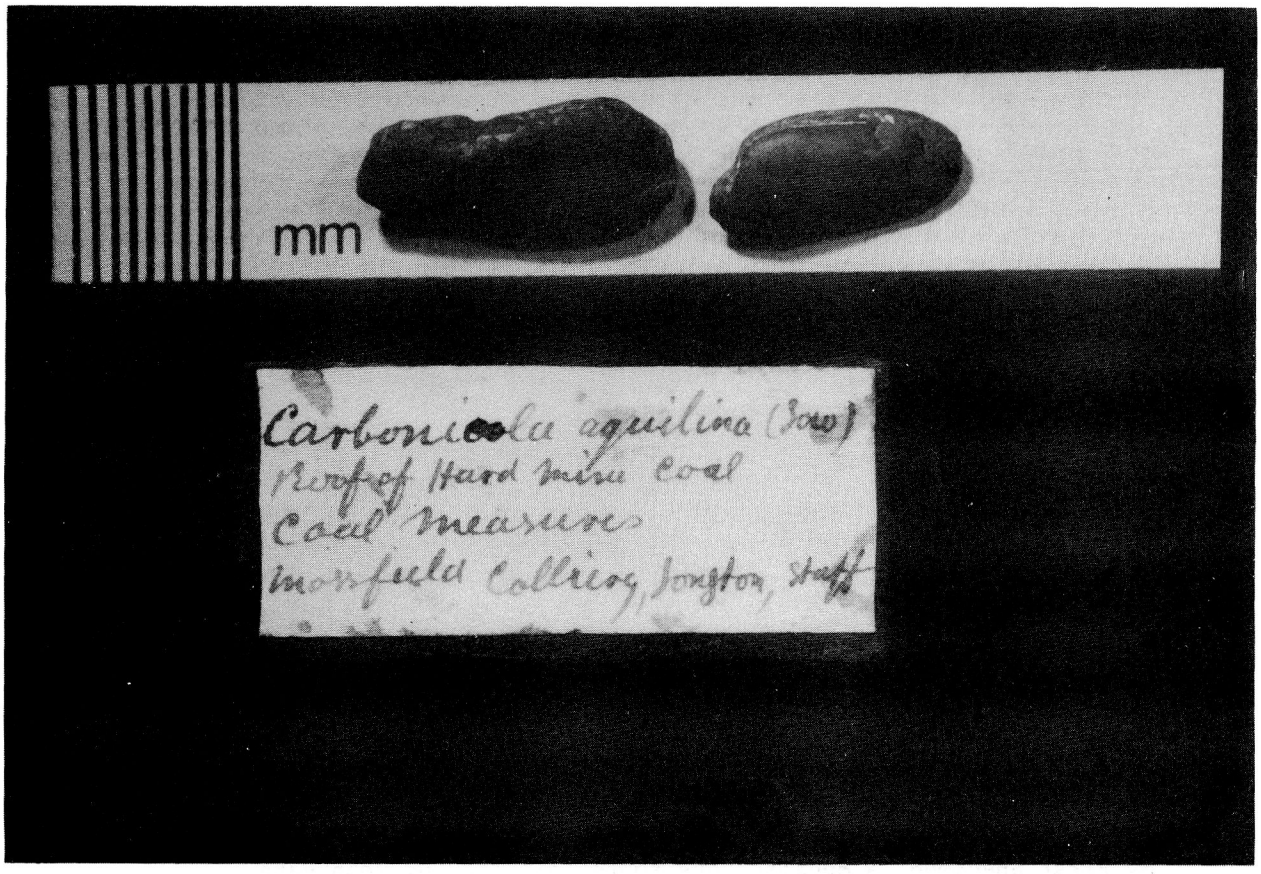


Typical Ward labels and handwriting (enlargement x2.5)

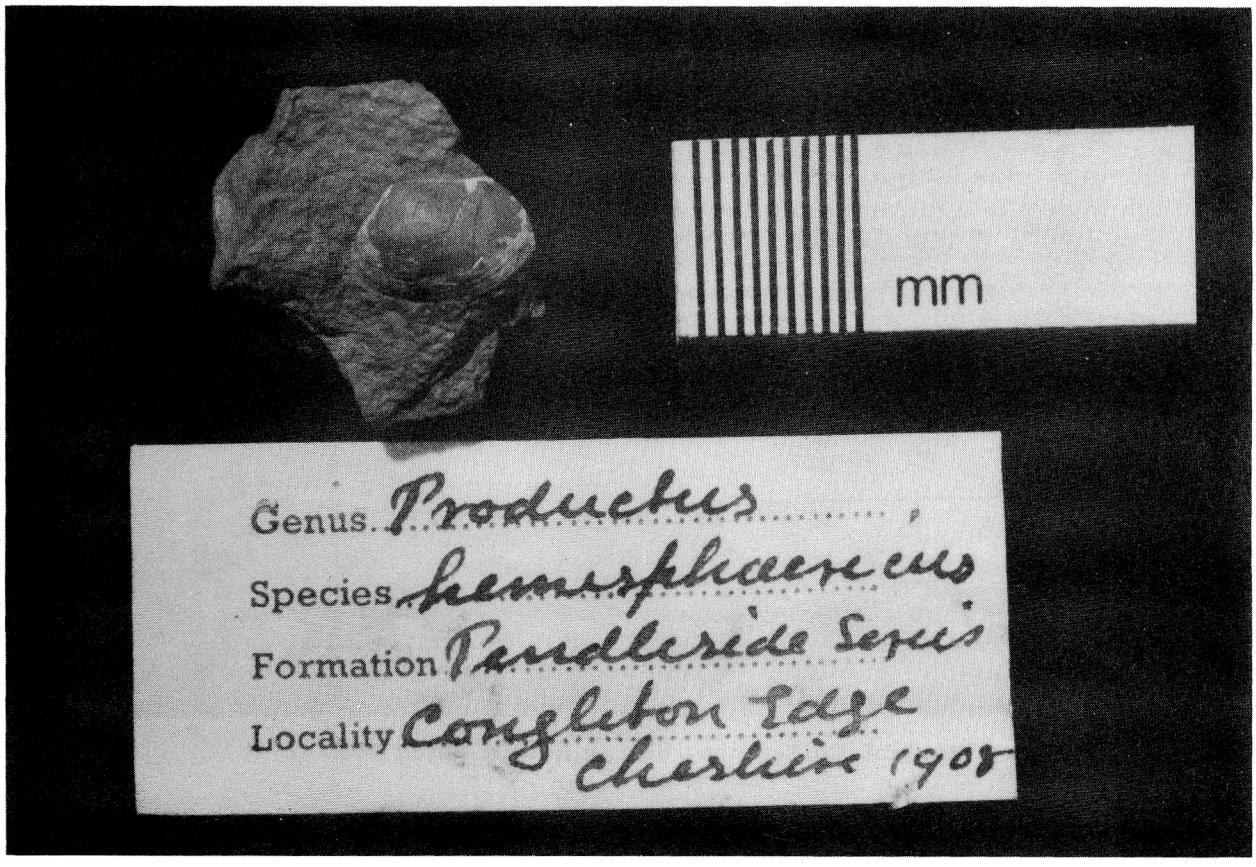


'My First Specimen' A Megalichthys tooth collected by John Ward, labelled 1857 on reverse (enlargement x2)

John Ward Memorial Collection, Hanley Museum circa 1930



Typical labels and handwriting of J.T. Wattison



River Manifold where it cuts its valley around the Carboniferous limestone of Ecton Hill. Here in the picturesque countryside he studied the geology, as well as indulging in his other hobbies of fly-fishing and shooting. He was an active member of the N. S. F. C. from its inception and was also a Fellow of the Geological Society. Ward (1893) refers to Wardle as "one of the early pioneers of Geological research in the Carboniferous Limestone formation of North Staffordshire"; he was a friend of E. Hull (Hull 1910) and it is certain that he provided specimens and advice to T. Davidson who compiled a monograph on Carboniferous brachiopods (Davidson 1863). It is equally certain that he had close contact with Samuel Carrington, who lived about 2 miles south of Swainsley, and was familiar with his collections; indeed Wardle was the instigator and chief benefactor in the construction of the monumental tomb over Carringtons' remains in Wetton Churchyard (Wardle 1873, p.33). The collection amassed by Wardle was preserved at the Nicholson Institute, Leek (Barke 1916) until about 25 years ago when it was removed because of lack of space. The material was rescued by Mr. Jack Parrack who added it to the Leek High School collection. Unfortunately the present collection does not have any documentary evidence which links any of the specimens to Wardle (pers. comm. Mr. S. M. P. Alcock: geology teacher). (For Obituary see N. S. F. C. 1908/09b).

WATTISON, JOHN THOMAS (23. 6. 1884 - 12. 1. 1974)

Born in the Potteries, John Thomas Wattison was one of the last great amateur collectors of the geological world. He was in the pottery industry, lived 26 years in Portugal, returned to England in 1936 spending the next 27 years at Shrewsbury before returning to his native town upon retirement. Whilst in Portugal he collected Ordovician trilobites (most of which are at the B. M. (N. H.)) from the Oporto hinterland and wrote a standard text on Portuguese butterflies. At Shrewsbury he organised a geological collection in the County Museum (Torrens 1982), and he has been featured in the new displays at Rowley's House Museum, Shrewsbury. The bulk of his collections, approx. 18,000 specimens, were bequeathed to Birmingham University Geological Museum (Strachan 1979) although STKMG have in the region of 200 geological specimens passed on to the museum by his friend Mr. E. A. Watkin and his nephew Mr. Malcolm Cox. (For obituaries see Watkin and Steward 1978; Cope and Strachan 1975).

REFERENCES

Barke, F. 1916 Report on Geology. North Staffs. Fld. Club, Jubilee Volume (1865-1915), 189-206.

Bemrose, G. J. V. 1936 Some notable museums: XVIII, The Museums and Art Gallery of Stoke-on-Trent, The North Western Naturalist, 11, 105-109

Branney, M. J. 1983 The Ornamental and Building Stones of Stoke-on-Trent. Staffs. Geol. Recording Scheme Publ. no. 1. City Museum and Art Gallery, Stoke-on-Trent.

Cleevely, R. 1980 82. Carrington, Samuel (1798-1870) Geol. Curat., 2 (8), 511.

Cope, F. W. & Strachan, I. 1975 John Thomas Wattison 1844-1974 Annual Report of the Geological Society 1974, 47.

Cross, T. 1979 More than one way to skin a cat ... Geol. Curat. Grp. Newsl., 2(7), 449.

Davidson, T. 1863 A monograph of the British Fossil Brachiopoda - Part V the Carboniferous Brachiopoda No. 5. (Staffordshire, plates 51-55). Palaentogr. Soc. (Monogr).

Garner, R. 1844 Natural History of the County of Stafford. John Van Voost: London.

Garner, R. 1886 Autobiography of Mr. R. Garner. North Staffs Nat. Field. Club and Arch. Soc., Annual Report for 1886, 130-134.

Greenwood, T. 1888 Museums and Art Galleries. Simkin Marshall and Co., London.

Halfpenny, G. & Steward, D. I. 1982. Natural History Section - The City Museum and Art Gallery, Stoke-on-Trent. Museums J., 81 (4), 216-218

Halfpenny, G. & Steward, D. I. 1983 Featured Institution: Stoke-on-Trent City Museum and Art Gallery, Natural History Section. Biol. Curat. Grp. Newsl., 3 (6), 273-320.

Hancock, E. G. & Pettitt, C. W. 1981 Register of Natural Science Collections in North West England. Manchester Museum, for North West Collections Research Unit.

Harrison, R. K. & Sabine, P. A. (Eds) 1970. A petrological - mineralogical code for computer use. Rep. No. 70/6 Inst. geol. Sci., 134pp.

Henderson, P. 1982 Hazards in the curation and display of mineral and rock specimens with especial emphasis on radioactivity. Geol. Curat., 3 (5), 292-296.

Hey, M. H. 1975 An index of Mineral Species and Varieties. B. M. (N. H.)

Hind, W. 1894-1896 A monograph on Carbonicola, Anthracomya and Naiadites. Palaeontogr. Soc. (Monogr.)

Howie, F. 1978 Storage environments and the conservation of geological material. The Conservator, 2, 13. - 19.

Hull, E. 1910 Sir Thomas Wardle and the Earl of Ducie. Reminiscences of a Strenuous Life. London: Hugh Rees Ltd. Chapter 23, 97-101.

McAldowie, A. M. 1922/23 In Memoriam: W. D. Spanton, F. R. C. S. Trans. North Staffs. Fld. Club, 57, 118-120

Stansfield, G. 1981 Three new natural history galleries. Museums J., 81 (2), 82-83.

Steward, D. I. 1980 North Midland Minerals, the Sarjeant Collection. Collections of the City Museum and Art Gallery, Stoke-on-Trent no. 1.

Steward, D. I. 1980b 82. Carrington, Samuel (1798 - 1870). Geol. Curat., 2 (9 & 10), 614.

Thackray, J. 1981 S. G. Perceval, a crusader for museums. Geol. Curat., 3 (2 & 3), 120-125.

Torrens, H. 1982 The Reynolds-Anstice Shropshire geological collection, 1776-1981. Archives of Natural History, 10 (3), 429-441.

Torrens, H. (Ed) 1983 United Kingdom Research on the History of Geological Sciences. Directory 1981. The Royal Society.

Tresise, G. 1976 Merseyside County Museums. Geol. Curat. Grp. Newsl., 1 (6) 257-159.

Ward, J. 1883 Obituary William Molyneux, F. G. S. North Staffs. Nat. Fld. Club, and Arch Soc., Report for 1883, 101-108.

Ward, J. 1893 The progress of geological and palaeontological research in North Staffordshire with a bibliography of works relating thereto. North Staffs. Nat. Fld. Club and Arch. Soc., Annual Report and Transactions, 27, 67-107.

Wardle, T. 1873 On Limestone, its occurrence, nature, and origin. North Staffs. Nat. Fld. Club, Annual Address for 1873. Contained within volume of North Staffs. Nat. Fld. Club Addresses, papers, etc. published 1875.

Watkin E. A. & Steward, D. I. 1979 John Thomas Wattison. Geol. Curat. Grp. Newsl., 2 (7), 430.

Whitehead, T. H. & Pocock, R. W. 1947 Dudley and Bridgnorth. Mem. Geol. Survey, Sheet 167, 42, note 1.

Zoetewij, H. 1979 82. Carrington, Samuel (1798 - 1870). Geol. Curat. Grp. Newsl., 2 (7), 430.

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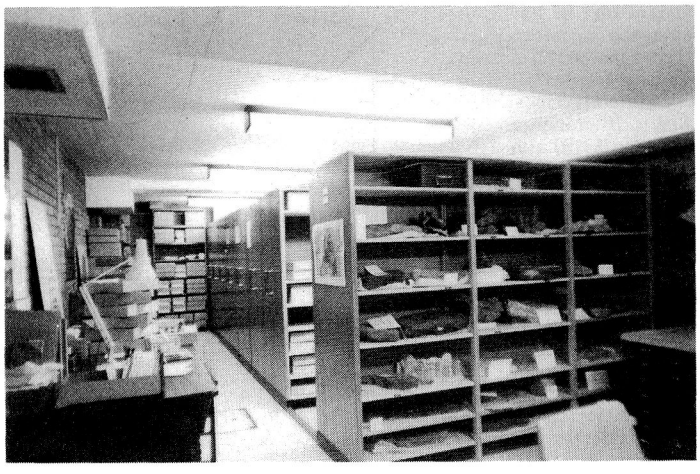

Geology Store, STKMG April 1983

'HIPPOCEPHALOIDES OF DR PLOT"
or
HOW ONE THING LEADS TO ANOTHER

by M. J. Boyd and A. G. Credland

Dr. Robert Plot (1640 - 1696) is perhaps best known as the first Keeper of the Ashmolean Museum in Oxford (opened in 1683), although he also served as Professor of Chemistry in the University and as Secretary and Editor to the Royal Society. Since Plot apparently had a reputation for greediness, it is arguably somewhat surprising that he accepted the Ashmolean Keepership; it was, as its second holder, Edward Lhwyd (1660 - 1709), pointed out, "a mean place, seeing that there is no salary" (Vernon and Vernon, 1909, p. 17). However, despite being described by Lhwyd as having "as bad morals as ever M. A. had," Plot was a man of extensive learning and a prolific publisher. Probably his most famous work is The Natural History of Oxfordshire (1677), which includes accounts of 'formed stones', many of which can easily be recognised as being fossils in the modern sense of the term. Plot, however, was no believer in the organic origin of even these. One of them, recognisable from Plot's illustration as an internal mould of the Upper Jurassic bivalve Myophorella hudlestoni, was described as "the most like to the head of a Horse as anything I can think of ....." and therefore given the name Hippocephaloides. As Bassett (1982, p. 11) has noted, although Dorset quarrymen have been known to refer to internal moulds of Myophorella and Laevitrigonia as 'osses 'eds, the extent to which Plot's more 'scientific' name became generally used is uncertain. It is thus worthy of note that Kingston upon Hull City Museums' palaeontology collections include an internal mould of (apparently) a species of Laevitrigonia, collected and labelled no later than 1791, which bears the ink inscription 'Hippocephaloides of Dr. Plot. Gloucester" (fig. 1). The specimen (KINCM 101. 66. 36) is from the collection of William Constable (1721 - 1791) of Burton Constable Hall, North Humberside, part of whose 'cabinet' was (in 1966) presented to Hull Museums by his descendant, John R. Chichester-Constable.

William Constable inherited the estate of Burton Constable from his father, Cuthbert Constable, in 1747. He was a man of wide interests (in both the arts and sciences) and undertook at least three Grand Tours; these evidently stimulated his collecting instincts and determination to patronise fine craftsmanship of all kinds. The Constable family maintained the old faith after the Reformation in England, a circumstance which debarred them from public affairs but which also doubtless encouraged William Constable (and many of his persuasion in the same position) to concentrate instead upon improving house and estate, and enjoying the lively intellectual climate of the 'Age of Reason'. According to family tradition, Constable was a member of the Lunar Society, that remarkable group of intellectuals which included Josiah Wedgwood, Matthew Boulton, William Wilkinson and Erasmus Darwin. This claim has not been confirmed by the surviving archive material, but it is known that Constable, like Boulton and his companions, contributed funds to support Joseph Priestley's experiments on gases, and Priestley certainly was a member of the Society.

In 1775, William Constable was elected a Fellow of the Royal Society with the support of Daniel Solander, Joseph Banks, Daines Barrington, Charles Howard Jnr, William Hudson and his own half-brother, Marmaduke Tunstall. Constable's sponsors described him as "a Gentleman deeply versed in natural history and every branch of polite literature".

Marmaduke Tunstall and William Constable were both the sons of Cuthbert Constable, and both were born at Burton Constable Hall. Marmaduke, born in 1743 to his father's second wife, changed his surname from Constable to Tunstall in 1760, as a condition of inheriting the estates of his uncle (confusingly, also called Marmaduke!) at Wycliffe-on-Tees. Tunstall was well-known for his interest in natural history (he was elected F. R. S. in 1771) and the museum he formed at his town house in Welbeck Street in London became a popular resort for men of learning and science. The collections were moved to his Wycliffe estate in 1780 or 1781. Here he had prepared "a handsome, large, airy room ..... much better than that in London" to receive them (Goddard, 1929). After Tunstall's death, on the 11th October 1790, his collections were bequeathed to William Constable, along with a considerable inheritance of land and property. Constable survived his half-brother by a mere six months, however, leaving all his property to his nephews Edward and Francis Sheldon in succession. The older nephew, Edward, sold the museum collections at Wycliffe to George Allan of Darlington in 1791. Allan died in 1800 and the collections were purchased from his executors by his son. They remained at Darlington until purchased in 1822 (for £400) by the Newcastle Literary and Philosophical Society. The acquisition of the Tunstall collections by the Lit. and Phil. was the main cause of the formation of what is now the Natural History Society of Northumbria, and they formed the nucleus of the Society's museum, now the Hancock Museum, in Newcastle upon Tyne.

Interestingly, however, it seems possible that not all of Tunstall's natural history material made its (eventual) way to the Hancock Museum. On the 14th and 15th May, 1792, at Mr. Christie's auction room in Pall Mall, a large number of natural history specimens (including many fossils, rocks and minerals), antiquities and art objects came under the hammer. Messrs. Christie, Manson and Woods of King Street, London, retain a copy of the auction catalogue, which is entitled "A Catalogue of the genuine museum of natural and artificial curiosities of William Constable, Esq; late of Yorkshire, dec., chiefly collected by the late Marmaduke Tunstall, Esq ....." Since Tunstall's Wycliffe museum was purchased by George Allan, the above description can be interpreted in two ways. The specimens auctioned in 1792 may have been mainly duplicates from Tunstall's collections (? transferred from Wycliffe to Burton Constable in the six months between the deaths of the two half-brothers) or may, alternatively, have been given or sold by Tunstall to his half-brother at an earlier date.

The story has now almost come full circle, for the third portion of the Tunstall/Constable collections which must be considered is that which includes the Hippocephaloides specimen described at the beginning of the present article. Hull Museums possess, as noted above a small portion (including at least 60 fossils and 141 rock and mineral specimens, in addition to shells and bird and mammal skeletons) of a William Constable 'cabinet', the great bulk of which remains at Burton Constable Hall. It seems very likely that this includes specimens derived from Marmaduke Tunstall. Since the Christie's auction catalogue referred to earlier indicates that almost every lot was sold, there are two possible explanations of the presence of the existing Constable 'cabinet' at Burton Constable. Either it represents a sample of Constable's collections which was retained by the family when the rest went to auction in 1792, or - and perhaps more likely - it consists of material bought back at the auction by agents acting for the Constable family. The Burton Constable 'cabinet' includes large numbers of marine molluscs, corals, echinoderms, rocks, minerals and fossils, in addition to two volumes of an herbarium.

Acknowledgements

The authors are indebted to Messrs Christie, Manson & Woods Ltd. for their kindness in supplying a xerox copy of the 1792 William Constable auction catalogue, including

details of purchasers and prices paid, and to the Secretary of the Royal Society for providing details of Marmaduke Tunstall's election to Fellowship.

References

Bassett, M. G. 1982. 'Formed Stones', Folklore and Fossils. National Museum of Wales Geological Series, 1, 32 pp. Cardiff.

Goddard, T. R. 1929. History of the Natural History Society of Northumberland, Durham and Newcastle upon Tyne 1829 - 1929. 195 pp. Newcastle, Andrew Reid & Co.

Vernon, H. M. & Vernon, K. D. 1909. A History of the Oxford Museum. 127 pp. Oxford, Clarendon Press.

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North Humberside,
HU1 3DX.

FIGURE 1. KINCM 101.66.36. Specimen of Laevitrigonia sp. bearing legend "Hippocephaloides of Dr. Plot. Gloucester." From cabinet of William Constable (1721 - 1791). Actual length of specimen 51mm.

THE 'COMPUTERISED' SEDGWICK MUSEUM

by David Price

1. Introduction & Historical Background.

Some four years ago there appeared in the pages of this journal (The Geological Curator, 3, 28-35) a comprehensive account of the Sedgwick Museum which, among other things, described in detail the museum's manual labelling, cataloguing and indexing procedures. That account was originally written by the author in early 1979 and accurately portrays the day-to-day working of the museum until well into 1981 but it is now in need of complete revision. In the interim the Sedgwick has become a fully 'computerised' museum.

The history of the various 'computerisation' projects at the Sedgwick Museum has been a long and checkered one. It began as early as 1966 when Dr. J. L. Cutbill was awarded a one-year grant by OSTI, the Office of Scientific and Technical Information (now the Research and Development department of the British Library) in support of a feasibility study on computer-oriented systems for museum data handling. Three further grants were subsequently awarded and supported projects of continuously growing scope up to 1977. In the later stages of this work the 'computerisation' of the Sedgwick Museum itself came gradually to assume less priority and the projects broadened to embrace a multidisciplinary approach to the analysis and recording of museum data in general and the development of a computer program package similarly capable of general application. As a consequence of this broadened approach the Cambridge work came to lead naturally to the setting up of the Museum Documentation Association (MDA) and the subsequent release of the GOS program package but it failed at that time to establish a computer-based data handling system at the Sedgwick Museum. Most of the museum's catalogue of 450,000 specimens had in fact been transcribed to machine-readable computer files and most of the general procedures for processing these files had been well-tested but the final stage of the project had not allowed sufficient time to work out all the practical details of operating and maintaining a working system.

It is an indication of just how much work in that direction remained to be done that when the Sedgwick project was resumed early in 1981, with the design of a working documentation system for the museum as its sole and urgent aim and with the most capable leadership available (Martin Porter had been the first director of MDA and the main author of GOS), it was not until the summer of 1982 that we were sufficiently confident in a working system to demonstrate it to other curators. That demonstration took place at a two day 'workshop' in October, 1982. The following year has been spent polishing-up that system: updating the main catalogue and editing gaps and major errors, making minor modifications to the data structure, finalising the data standard and completing the documentation. The following description is intended to cover comprehensively the working of this finalised system from a curator's (rather than an information scientist's or a research palaeontologist's) point of view. Aspects of the system at an early stage in its development were referred to by Stephanie Etchells-Butler (1982) but several features have, since then, been modified.

2. Basis of the Sedgwick System - Hardware, Software, Data Standard.

The Sedgwick computer-based data handling system is based on the GOS program package in the version maintained by the University of Cambridge Computing Service which at the time of writing differs marginally from the MDA's own version. In addition there are a number of extra programs in use, written by Martin Porter, mainly related to a direct-access information retreival (IR) system. These programs are all implemented on the mainframe computer at Cambridge - an IBM 3081 - and are invoked through procedures written in Phoenix the local command language. The Sedgwick curators have at their disposal a Phoenix command library through which they run all the routine jobs necessary to the maintainance and updating of the catalogue, the answering of enquiries and the processing of loans. Under this system the various GOS programs ('processors') invoked by the Phoenix commands or during Phoenix 'jobs' can remain effectively invisible to the operator if he or she so wishes.

To facilitate data-preparation the text-form input files are prepared using word-processors - Acorn 6809 micro-computers with the powerful screen editing facilities provided by FLEX software and with a facility for transferring data to the 3081 mainframe. Various checking documents, catalogue output for checking purposes and hard-copy output for routine enquiries are generated from the 3081 by linprinter. Labels are prepared via output to a Diablo daisy-wheel printer and then xerox reduced. Final hard-copy catalogue and taxonomic indexes are generated as microfiche using facilities offered by the University of London computing Service.

The Sedgwick Museum has evolved its own data standard which is a specialised palaeontological data standard geared to the needs of a research related collection with a large proportion of type, figured and cited specimens. It differs in several features from the corresponding parts of the MDA data standard.

Within the museum catalogue which now exists as a single computer file written at 6250 b.p.i. on a standard 2400 ft IBM magnetic tape (with back-up versions for security), palaeontological data is stored in a precisely structured machine-readable form. To enable its manipulation by the various programs ('processors') of the GOS package each record is broken down into a large number of discrete data-categories or FIELDS each labelled or TAGGED so that it can be identified by the programs operating on it. The nature and relationships of all the fields considered necessary to contain the data in any likely Sedgwick Catalogue record are described by the SM FORMAT, a complex hierarchical arrangement of fields derived from a rigorous analysis of the full range of manual catalogue entries together with a consideration of what other kinds of data it would ideally be useful to record for each specimen.

The SM Format can be visualised as an irregularly branching tree-like structure. The main trunk represents a complete record and this is progressively divided into increasingly narrower data categories until the terminal branches represent BASIC data fields which, unlike the GROUP data fields nearer the trunk cannot be divided further and contain the actual items of data making up the record either as strings of characters or as numeric variables. Basic fields are either KEYWORD fields containing essential data or DETAIL fields containing data elaborating the keywords.

3. Data Preparation & Checking: Label Generation: Catalogue Assembly.

Data preparation consists essentially in taking the data relating to each specimen, breaking it down into categories corresponding to fields of the SM Format, identifying each category with a field tag and then typing this data into the microcomputer. The SM Format, however, is a very large and complex structure. Fortunately for the purposes of data preparation it is not normally necessary to know

```
*key

(*bcat)

*part
     *pt *pn *count *pd

*store

*cs
     *prt *pers *date *rn *note

*oh
     *f *prt *pers *date *rn *note

*ps
     *loc *ll *gr *ln *gd *rk *zone *age *sd
     *a *d *t *r *v *pp *rd *note

*re
     *f *prt *pers *date *gn *tax *keyw *dd *pres *lith
     *a *d *t *r *v *pp *rd *note

*cat

     [note - '*' by itself repeats preceding field]
#
```

FIGURE 1 - Sedgwick data preparation 'prompt-list'.

*key - the SM catalogue number

*bcat - broad category of specimen, by default = "fossil"

*part - a declaration that the specimen comprises 2 or more PARTS
- *pt - the catalogue number suffix for each part
- *pn - the part name
- *count - the number of parts
- *pd - supplementary part information (e.g. part associations)

*store - the storage location for the specimen

*cs - the COLLECTION STATEMENT
- *prt - the part(s) of the specimen concerned
- *pers - the person or institution concerned
- *date - the date or a time period
- *rn - any number applied to the specimen at the time of collection
- *note - a general detail field

*oh - the OWNERSHIP HISTORY
- *f - a function word describing the mode of aquisition
- *rn - the number of the specimen in any pre-existing collection

*ps - the PROVENANCE STATEMENT
- *loc - a specific place name
- *ll - lattitude and longitude
- *gr - a grid reference
- *ln - any locality number
- *gd - supplementary geographical information
- *rk - lithostratigraphic information
- *zone - biostratigraphic information
- *age - chronostratigraphic information
- *sd - supplemntary stratigraphic information
- *a - author
- *d - date
- *t - title
- *r - journal
- *v - volume
- *pp - page & figure details
- *rd - additional detail

} bibliographic reference for locality or stratigraphy data

*re - a RESEARCH EVENT
- *f - a research function word
- *gn - broad taxonomic group
- *tax - full taxonomic name with author(s)
- *keyw - morpholigical keyword(s)
- *dd - supplementary morphological detail
- *pres - preservational keyword(s)
- *lith - matrix lithology keyword(s)

*cat - cataloguer (name and <year)

FIGURE 2 - Tag-explanations for data-preparation 'prompt-list'

the intricacies of the full format: because a large amount of final data structuring is done automatically by the GOS 'build' processor, a much abbreviated version will, for the vast majority of records, suffice at the input stage. Using its tag to represent each data field, this abbreviated version of the format is used as a data preparation 'PROMPT-LIST' (Figure 1). The use of this prompt-list, together with a sheet of simplified tag explanations (Figure 2), enables routine records to be typed directly to the Acorn 6809 avoiding the duplicated effort of re-typing from manuscript catalogue or pre-formatted recording sheets.

To give an example, the record for a specimen of the middle Jurassic brachiopod Goniorhynchia boueti (Davidson) collected by the author from the famous Boueti Bed locality on Herbury in Dorset would, assuming a museum catalogue number A.100, be typed as follows:

```
*key A.100
*cs*pers Price, D.*date 1/8/1983
*ps*loc Herbury * Weymouth  7km E.N.E. *Dorset *gr
 NGR SY 612810
*rk Boueti Bed * Great Oolite Series *age Bathonian *
 Jurassic
*re * gn Brachiopod * tax +Goniorhynchia +boueti
 (Davidson)
#=
```

(This is, of course, deliberately very simple; much more complex records are normal in the more recent part of the catalogue. Some actual examples are given in the Appendix. As will be seen below, the museum drawer or shelf number - * store - is usually added to the record at a later stage.)

Floppy disk files of such records are gradually built-up. This need not involve as much typing as might be expected since any items of data common to several records are typed in once only and then, at the command of certain flags set to precede the records, inserted into all appropriate records by the GOS 'build' processor. Frequently occurring words or taxonomic names may also be abbreviated at the input stage and expanded by 'global' edits to the files at a later stage. As a safeguard, after each bout of typing, the files are copied to a back-up version on a second floppy disk. On completion of each file it is read carefully on the monitor screen, screen edited where necessary and then transferred to the cataloguer's disc file-space on the 3081 mainframe.

After transfer to the 3081, input files can undergo further editing particularly to 'globally' expand any abbreviations used at the input stage. They are then subjected to the action of the GOS 'build' processor which converts them from text-form files to machine-readable GOS files. It is at this stage that further checking of the files becomes possible. The build processor itself may generate ERROR MESSAGES. If, for instance, in the sample record for the specimen of Goniorhynchia boueti considered above the first and last lines of input had respectively been mis-typed as

```
*key A100
```

and

```
*ree*gn Brachiopod*taxGoniorhynchia+boueti (Davidson)
```

the built processor would have generated the following error messages:

```
1:Error in analysing/A100/
1:Unknown code - *REE
1:unknown code - *TAXGONIORHYNCHIA
```

Once they are available in machine-readable form the files are routinely subjected to various further checks. The sequence of catalogue numbers is automatically checked to ensure that numbers have not been duplicated, or improbable numbers given (for instance by mis-typing an extra digit) or unintentional gaps left. Vocabulary lists are also generated for each file to check that similar terms have been typed consistently in each record. The ultimate check in this sequence is to generate lineprinter test-catalogue and ensure that this reads sensibly. Errors revealed by any such checks will necessitate editing of the original input file and then re-building and re-checking. The final versions of these files are then archived ('dumped') to magnetic tape as a safeguard against disc-file loss or corruption.

When an input file has been thoroughly checked the 'built' GOS file resulting from it can be used to generate tray labels for each specimen or for each group of specimens associated on a single block. There is a standard Phoenix job which may be submitted with various options to cope with all contingencies of label generation. The resulting labels are somewhat abbreviated versions of the full catalogue entry for each record formatted into compact blocks for double column printing on the Diablo printer and then Xerox-reduced to fit into standard trays (see examples in Appendix). Once labels have been placed in the trays specimens can be placed in their final positions in the museum and store locations added to each catalogue record, either by editing the original input file or by using the GOS 'combine' processor to add data to the 'built' file.

Once an input file has been 'built', checked, used for label-generation and finally had store information added it passes from the hands of the 'cataloguer' and becomes the responsibility of the Curator acting as 'systems manager'. He will independantly check the structure of the file and ensure that museum cataloguing conventions have been properly followed. A file which is satisfactory to the systems manager will be archived to magnetic tape in its 'built' form along with other CATALOGUE ADDITIONS files. These will consist both of new records to be appended to the main catalogue and of updates to existing records in the main catalogue. Record updates will have been prepared and checked in essentially the same way as new whole records and used to generate 'update labels' before being filed.

As well as a tape of catalogue additions files the systems manager also maintains EDITS files. Errors in hard-copy versions of the main catalogue may be noted from time to time by any user. For records containing major errors 'edits' will be prepared - partial records to be combined with the existing faulty record in such a way as to delete or modify the contents of certain fields or add new fields. Both the additions files and the edits files will ultimately be combined with the main catalogue file using the GOS 'combine' processor but the two operations are rather different. In the first case new records are simply added to the file or new fields added to the ends of existing records; this requires relatively simple general commands. The insertion of fields at selected points in the structure of existing records or the supression or modification of selected fields requires very precise instructions for each record. In the Sedgwick system the GOS 'combine' processor therefore operates in two distinct modes and edits are run separately from additions and updates and, in fact, require a 'test-run' before being merged with the main catalogue (retrieving records for such test-runs is one important use of the IR system). The Sedgwick system, however, is still too new for the frequency with which it will be appropriate to combine either the additions or the edits file with the main catalogue to be apparent. Possibly once every six months will suffice. Between updates to the main catalogue the information in the additions file can be displayed as

printed catalogue or indexes but is not available to the direct-access IR system.

We will return to the subject of updating shortly.

4. Hard-copy Output

The Sedgwick system is capable of routinely generating labels, catalogue and several indexes in a variety of formats. Label production has been outlined already. Catalogue too can be produced in A4 format for printing on the Diablo printer when for any reason a high-quality printed version is required but routine production of catalogue is by line-printer as instanced among the checking procedures noted in Section 3. A number of indexes too may be generated for lineprinter output. In these records are ordered taxonomically or on the basis of geographical locality, stratigraphy, specimen donor, collector or bibliographic reference. The original purpose of rigorously analysing the data in each record into tagged fields was indeed to allow the possibility of generating indexes on a large variety of keyword terms and the generation and use of such indexes for data retrieval was quite central to all thinking about data retrieval in the museum up until the most recent phase of the computerisation project. In fact while we retain the ability to produce a full variety of indexes their use in practice has always involved a number of difficulties.

Large lineprinter indexes prove very unwieldy, particularly when two or more need to be used in conjunction. This problem can be reduced by trying to create 'multiple' indexes where records are arranged not only according to a primary criterion - say geographical locality - but within that also subdivided on secondary criteria - perhaps taxonomically and stratigraphically. It can also be reduced by generating compact, easily handled microform output (COM) - the Sedgwick has opted for 127mm x 76mm microfiche at a 42x reduction which gives the equivalent of 208 lineprinter pages per fiche. Difficulties, however, remain which stem largely from the fact that the bulk of the machine-readable Sedgwick catalogue was simply transcribed, word for word, from a manual catalogue which had grown gradually over almost 50 years. Over that period stratigraphical nomenclature and useage have changed considerably. Place names too over the whole range of the catalogue will frequently have several different spellings or identical localities will be defined in different ways. For such reasons a single horizon, a single locality or even a single donor may appear in an index at several different places.

Because of all these difficulties with indexes and to obviate the need for re-printing large numbers of indexes at each updating of the catalogue, the museum has now reduced the number of routinely used indexes to just one - a taxonomically based index divided up into sections on the basis of convenient supra-generic groups. This taxonomic index in the form of microfiche and also a fiche version of the catalogue in specimen number (alphanumeric) order are in fact the only fixed hard-copy documents in any way essential to the Sedgwick 'system'. A permanent library of other indexes has been rendered unecessary by the use of the Information Retrieval system. It is this facility which is now central to all Sedgwick Museum procedures.

5. The Information Retrieval System

Using the IR system the entire main catalogue file (or, strictly, a comprehensive index derived from it) can be searched rapidly on-line on the basis of pre-determined search criteria which may be very complex. The system responds first by giving the number of specimens found in all records meeting the search criteria. It can then be asked to list the numbers of all these specimens or to submit a job to retrieve the actual records from a magnetic disc version of the catalogue. The job may take 15 minutes or so to run and when the records are retrieved they can be used to generate indexes or catalogues in the same way as other files.

Each specimen in the catalogue is indexed by a set of TERMS generated automatically from the GOS record describing the specimen. Terms, which contain up to 23 lower case letters, digits, commas or full stops, fall into 14 categories each characterised by an initial upper case letter:

A = authorship	e.g. 'Asparks, b.w. 1969'
D = donor/collector	e.g. 'Dbrydone, r.m. coll'
F = function word (*f in *re)	e.g. 'Fholotype'
G = broad taxonomic group	e.g. 'Gtrilobite'
K = keyword	e.g. 'Kcranidium'
L = locality	e.g. 'Lrobinhoodsbay'
M = matrix lithology	e.g. 'Mblackshale'
N = informal taxonomic name	e.g. 'Ngoniatite'
P = preservation	e.g. 'Pexternalmould'
Q = age	e.g. 'Qllandoveryseries'
R = rock unit	e.g. 'Roxfordclay'
S = stor age location	e.g. 'Sxxx.n.39' (museum drawer no.)
T = genus	e.g. 'Tcalymene'
U = species	e.g. 'Uerectus'

In addition every specimen in the catalogue is indexed by the term 'I'. (This helps the IR system to deal with gaps in the catalogue).

Within the IR system all terms have a number reflecting their position in the term index and a frequency indicating the number of specimens indexed by the term. Terms usually display in number, term, frequency order, e.g.

5576 = Fholotype (1723)

The simplest possible retrieval request is based on a single term. Thus the query

a≠q with 'Gammonoid'

would ask what ammonoids there are in the collection. More complex queries combine terms according to the rules of Boolean logic using the operators '&' (=logical and), '!' (=logical or) and '-' (=logical subtraction). Thus the query

a≠q with 'Gammonoid' & 'Roxfordclay' & 'Lpeterborough'

would ask for all ammonoids from the Oxford Clay of the Peterborough area while

a≠q with ('Gammonoid' & 'Lpeterborough') - 'Roxfordclay'

would ask what ammonoids there were in the collection from the Peterborough area other than from the Oxford Clay. A specimen identity number or a range of identity numbers may also be included in such queries and the actual term may be replaced with its term number in the current index.

5a The Problem of Variant Forms of a single Term

It was pointed out earlier that a major difficulty with the use of hard-copy indexes was the extent to which single terms can vary in their spelling throughout the catalogue. With the IR system this problem can be overcome. There is a facility within the system for listing all index terms which show similarity to a given term. Each term in the term index is broken into fragments of four characters and seperately indexed under all of these fragments. Peterborough, for instance, would generate the fragments 'pete', 'eter', 'terb', 'erbo', 'rbor', 'boro', 'orou', 'roug'

and 'ough'. The measure of similarity between terms is based on the number of fragments they have in common. Similar terms can be listed-out in decreasing order of similarity up to any number specified by the user. The list can be restricted to terms of a particular category from the adjacent list or may include all terms irrespective of caegory.

The usefulness of this 'similar term' facility can be illustrated by an actual example. A query about what fossils there are in the collection from the upper Ordovician Sholeshook Limestone Formation of south-west Wales might be expected to take the form

a#q with 'Rsholeshooklimestone'

But if the submission of such a query were preceeded by a request for lithostratigraphic terms similar to Sholeshook Limestone:

a# simt with Rsholeshooklimestone

the system would respond with

Rsholeshooklimestone:

28972 = Rsholeshooklimestone	(384)
28973 = sholeshooklimestonefor	(83)
28974 = Rsholeshooklimestonehor	(33)
27140 = Rhighsholeshooklimestn	(12)
28971 = sholeshocklimestone	(16)
28969 = Rshoalshooklimestone	(485)
28970 = Rshoalsshooksholeshookli	(2)
25157 = Rakpatoklimestone	(375)
28522 = Rpotholelimestone	(2)
25229 = Rardwicklimestone	(14)

Of this list of terms (10 are given by default but the system can be asked for any number) only the first 7 are relevant. The second term in the list represents the first 23 letters of 'Sholeshook Limestone Formation', the third is similarly derived from 'Sholeshook Limestone horizon', the fifth is a mis-spelling, the sixth an alternative spelling and the seventh derived from entries which give both spellings. From this list, using term-numbers rather than the actual terms, the original query could now be re-written as

a#q with 27140 28969 28970 28971 28972 28973 28974

and whereas the original query would have yielded 384 specimens, the more comprehensive query now yields 856.

6. Updating the System

It will now be seen that there are three main components to the Sedgwick System which need to be periodically updated: the main catalogue file, the IR system and the fiche hard-copy catalogue and taxonomic index. As mentioned at the end of Section 3 above, it is envisaged that the additions file will be merged with the main catalogue perhaps once every six months. Any edits can also be run against the main catalogue at the same time. The up-to-date main catalogue can then be used to update the IR system. Six months here is only a guide-line figure but on that basis the main catalogue and the IR system would be on average 3 months behind current cataloguing, a figure which seems not unreasonable. As part of each updating of the catalogue there is a standard job which combines together all additions files, including those used in previous updates, as a CATALOGUE APPENDIX. This appendix file dates back to the time the last fiche versions of the catalogue and taxonomic index were generated and contains in a single, ordered GOS file all the new records and record updates which have accumulated since that time. The appendix file can therefore be used to generate hard-copy catalogue and indexes which will supplement the main fiche catalogue and indexes. Each such hard-copy version of the appendix file will thus subsume hard copy generated from individual additions files and of course those generated from earlier versions of the appendix file. The combination of main fiche catalogue and taxonomic index with appendix catalogue and taxonomic index will thus be as up to date as the main catalogue. It is planned that both the main catalogue and taxonomic index and the appendix versions will be available to external users in fiche versions (see also Section 8).

7. Loans

Specimens loans are effectively dealt with as 'research events' for the appropriate record:

```
*key A.100
*re*f loaned*pers Jones, T.  Durham *date 12/10/83
#
```

The input file for such loans is easily prepared since the research event will be the same for each record and need be typed in once only as a 'constant'. The 'built' file then acts as input for a standard job which retrieves the relevant records via the IR system and stores them, each with their new research event, in a special LOANS FILE. The input file is also used to generate specimen removal slips and two catalogue print-outs - one (with 'store' information removed) for the borrower and one for the museum files. On return a 'returned' research event is generated for each record but the records are not removed from the loans file. The steadily growing loans file will thus come to show the frequency with which particular specimens are borrowed. There is also a facility to generate rapidly from the loans file a list of all specimens currently on loan to any particular borrower.

8. Main Benefits of the System

The main curatorial advantages of the computer based system described above can be summarised as follows:

1. Data is typed in once only in a very efficient way (using 'constants' and abbreviations that can later be expanded).

2. Once checked the data can be manipulated to allow generation of high quality labels or of catalogues or indexes in various formats. Any number of documents can be generated from the one input file.

3. The whole catalogue and a complete taxonomic index can be cheaply generated in very compact, easily manipulated fiche form (currently 117 fiche for the catalogue, 90 for the index). These fiche versions can be regularly updated by generating a few supplementary fiche.

4. The IR system enables the curator to answer rapidly a wide variety of queries and gives rapid access to accurate collection statistics. Appropriate hard-copy can be generated for external enquirers in answer to IR queries.

5. Loans and returns can be rapidly and automatically documented; this includes the printing out for the borrower of full catalogue data on each specimen borrowed. Lists of all material on loan to a particular borrower can be generated on demand.

Research workers benefit from the curator's enormously enhanced ability to answer queries and to locate material within the collections and in doing these things to generate for them (at a modest charge) catalogues or indexes especially tailored to their requirements. It is also intended

shortly to make available for sale to other institutions and individual research workers diazo copies (with museum storage locations removed) of the Sedgwick fiche catalogue and taxonomic index or of particular sections of these. Simple taxonomically based enquiries could then be answered without need to refer to the curator and in answer to more complex enquiries from workers with a fiche catalogue at their disposal the curator could merely supply a list of the relevant specimen numbers. Indeed, to go a stage further, external users with a fiche catalogue and a telephone link to the Cambridge computer could use the IR system indexes to extract the numbers for themselves. (They would not be allowed to consult the direct-access version of the catalogue).

The above section completes an outline description of the Sedgwick system which is intended to be reasonably objective. Many parts of that system have been fully operational since September, 1982. The final 'polishing-up' phase referred to in Section 1 resulted in the inauguration in August 1983 of a new specimen numbering system. This differentiates records input directly to the computer-based system according to a new data standard carefully designed to derive the maximum benefit from that system from records simply transcribed from the manual catalogue. August 1983 thus marks the complete replacement of manual cataloguing procedures at the Sedgwick Museum.

My final section is more subjective

The Sedgwick Experience

It will be evident that of the skills needed to run the 'computerised' Sedgwick Museum many are quite different to those needed to operate its manual equivalent. It must not be thought, however, that these new skills to any large degree replace the older ones. Mostly they are additional. Palaeontological and biostratigraphical knowledge and skills in practical palaeontological techniques are no less important curatorially than they ever were and the prime criterion for judging the value of all the computer-based procedures must be their usefulness in furthering palaeontological and biostratigraphical research. But the curator now must understand not only the needs of research workers. He must also be sufficiently familiar with the working of the computer-based system to ensure that it is tailored to those needs.

There is perhaps a danger, in museums generally, that the new skills associated with information handling will be seen as the strict province of new specialists - information scientists, data preparation assistants etc. The Sedgwick experience would argue very much against this. Many of the problems of the earlier phases of the Sedgwick 'computerisation' in fact stemmed from such a strict division of labour and consequent difficulties in communication.

On the basis of my experience in the Sedgwick and from what I have seen in other museums I would argue that information scientists, particularly if working in a separate 'computer section' or an external agency, cannot by themselves design catalogues, labels, indexes or IR systems and then hand them over for curators to use. If they attempt to do so the curators will only marvel in dismay at their (inevitable) lack of comprehension of what is scientifically or curatorially acceptable. Similarly if data preparation is left to scientifically untrained typists the errors generated, at least in records as complex as those in the Sedgwick catalogue, will be both plentiful and profound and either checking and editing will come to take more time than the initial typing or the errors will find their way into the final output. The scientist/curator must involve himself in the 'nuts and bolts' of data handling and data preparation if he is to retain control of his catalogues, labels and indexes.

A successful working system has only emerged from the most recent phase of the Sedgwick 'computerisation' project because that phase involved the closest collaboration between a palaeontologist/curator (myself) and a computer scientist (Martin Porter). That collaborative process necessarily involved a great deal of 'education' for both of us. For my part I had to acquire the knowledge to pilot and, if necessary, act as first-line mechanic to the complex system described in this paper and only as a result of doing so was able to participate in the design of some of its more peripheral features. I and my museum assistants are now responsible also for data preparation. To many curators the cost in terms of time and effort of such involvement will seem very high. I can only reply that at the Sedgwick it was necessary, a sine qua non of an acceptable system. I suspect that this will prove to be the case in other museums also.

APPENDIX

Page 52 - part of a text-form input file with 2 'constants', 'a' and 'b' and 5 base records.

Page 53 - the records derived from this input file printed out in label format on the Diablo daisy-wheel printer and then (inset) xerox-reduced to the smallest practical size.

Page 54 - the standard A4 version of catalogue output for the same records.

Page 55 - a taxonomic listing of brachiopods from the Skiddaw Slate Group. This is in exactly the same format as the standard taxonomic index; the dotted line represents the bottom of the first page.

Page 56 - the first part of a locality listing for all trilobites of the genus Platylichas.

Pages 55 and 56 both represent 'multiple indexes' in the sense used on p. 49

Dr. D. Price,
Sedgwick Museum,
Department of Earth Sciences,
Downing Street,
Cambridge.
CB2 3EQ.

```
*oh *pers Seaborne, M.V.J. Collection *date 1980
*ps *loc Crugan Farm <small laneside quarry 150m W. * Llanbedrog
<1km N.E. of church * Gwynedd * Wales *gr NGR SH 3332341
*rk Crugan Mudstone Formation <basal
*age Rawtheyan Stage * Ashgill Series * Ordovician
*re *f identified *pers Price, D. *date 1980 *gn Trilobite
*re *gn trilobite
#m a
*re *re *f listed *a Price, D. *d 1981 *r Geol. J.
*v 16 *pp p.203, table 1
#m b

#la
*key A.106263
*re *tax +Pseudosphaerexochus +seabornei Price *keyw pygidium
*pres internal mould
*re *f fig'd * paratype *tax +Pseudosphaerexochus +seabornei Price
*a Price, D. *d 1981 *r Geol. J. *v 16 *pp p.211, fig.3c #

#l a b
*key A.106264
*re *tax +Duftonia +geniculata Ingham *keyw articulated exoskeleton
<incomplete *pres internal mould
*re *tax +Duftonia +geniculata Ingham #

*key A.106265
*re *tax +Arthrorhachis +tarda Barrande *keyw articulated exoskelton
*pres external mould
*re *tax +Arthrorhachis +tarda (Barrande) #

#l a
*key A.106267
*part *pt a * b *pd part and counterpart
A.106267a on same block as A.106268b, A.106268a on same
block as A.106267b
*re *tax +Dindymene +longicaudata Kielan *keyw articulated * thorax
* pygidium *pres internal mould * external mould
*re *f fig'd *prt b (cast) *tax +Dindymene +longicaudata Kielan
*a Price, D. *d 1981 *r Geol. J. *v 16 *pp p.211, fig.3i #

#l a b
*key A.106268
*part *pt a * b *pd Part and counterpart; A.106268a on same block
as A.106267b, A.106268b on same block as A.106267a
*re *tax +Dindymene +longicaudata Kielan *keyw cranidium <incomplete
*pres internal mould * external mould
*re *tax +Dindymene +longicaudata Kielan #
```

A.106263
Seaborne, M.V.J. Collection, 1980.
Crugan Mudstone Formation (basal), Rawtheyan Stage, Ashgill Series, Ordovician; Crugan Farm (small laneside quarry 150m W.), Llanbedrog (1km N.E. of church), Gwynedd, Wales, grid ref: NGR SH 3332341.
Identified, Price, D., 1980, as Trilobite Pseudosphaerexochus seabornei Price; pygidium. Internal mould.
Fig'd, paratype, Price, D., 1981, Geol. J., 16, p.211, fig.3c, as trilobite Pseudosphaerexochus seabornei Price.

A.106264
Seaborne, M.V.J. Collection, 1980.
Crugan Mudstone Formation (basal), Rawtheyan Stage, Ashgill Series, Ordovician; Crugan Farm (small laneside quarry 150m W.), Llanbedrog (1km N.E. of church), Gwynedd, Wales, grid ref: NGR SH 3332341.
Identified, Price, D., 1980, as Trilobite Duftonia geniculata Ingham; articulated exoskeleton (incomplete). Internal mould.
Listed, Price, D., 1981, Geol. J., 16, p.203, table 1, as trilobite Duftonia geniculata Ingham.

A.106265
Seaborne, M.V.J. Collection, 1980.
Crugan Mudstone Formation (basal), Rawtheyan Stage, Ashgill Series, Ordovician; Crugan Farm (small laneside quarry 150m W.), Llanbedrog (1km N.E. of church), Gwynedd, Wales, grid ref: NGR SH 3332341.
Identified, Price, D., 1980, as Trilobite Arthrorhachis tarda Barrande; articulated exoskelton. External mould.
Listed, Price, D., 1981, Geol. J., 16, p.203, table 1, as trilobite Arthrorhachis tarda (Barrande).

A.106267
a-b
Seaborne, M.V.J. Collection, 1980.
Crugan Mudstone Formation (basal), Rawtheyan Stage, Ashgill Series, Ordovician; Crugan Farm (small laneside quarry 150m W.), Llanbedrog (1km N.E. of church), Gwynedd, Wales, grid ref: NGR SH 3332341.
Identified, Price, D., 1980, as Trilobite Dindymene longicaudata Kielan; articulated, thorax, pygidium. Internal mould; external mould.
Fig'd, part b (cast) Price, D., 1981, Geol. J., 16, p.211, fig.3i, as trilobite Dindymene longicaudata Kielan.

A.106268
a-b
Identified, Price, D., 1980, as Trilobite Dindymene longicaudata Kielan; cranidium (incomplete). Internal mould; external mould.
Listed, Price, D., 1981, Geol. J., 16, p.203, table 1, as trilobite Dindymene longicaudata Kielan.

A.106263
Seaborne, M.V.J. Collection, 1980.
Crugan Mudstone Formation (basal), Rawtheyan Stage, Ashgill Series, Ordovician; Crugan Farm (small laneside quarry 150m W.), Llanbedrog (1km N.E. of church), Gwynedd, Wales, grid ref: NGR SH 3332341.
Identified, Price, D., 1980, as Pseudosphaerexochus seabornei Price; pygidium. Internal mould.
Fig'd, paratype, Price, D., 1981, Geol. J., 16, p.211, fig.3c, as Pseudosphaerexochus seabornei Price.

A.106267
a-b
Seaborne, M.V.J. Collection, 1980.
Crugan Mudstone Formation (basal), Rawtheyan Stage, Ashgill Series, Ordovician; Crugan Farm (small laneside quarry 150m W.), Llanbedrog (1km N.E. of church), Gwynedd, Wales, grid ref: NGR SH 3332341.
Identified, Price, D., 1980, as Dindymene longicaudata Kielan; articulated, thorax, pygidium. Internal mould; external mould.
Fig'd, part b (cast) Price, D., 1981, Geol. J., 16, p.211, fig.3i, as Dindymene longicaudata Kielan.

A.106264
Seaborne, M.V.J. Collection, 1980.
Crugan Mudstone Formation (basal), Rawtheyan Stage, Ashgill Series, Ordovician; Crugan Farm (small laneside quarry 150m W.), Llanbedrog (1km N.E. of church), Gwynedd, Wales, grid ref: NGR SH 3332341.
Identified, Price, D., 1980, as Duftonia geniculata Ingham; articulated exoskeleton (incomplete). Internal mould.
Listed, Price, D., 1981, Geol. J., 16, p.203, table 1, as Duftonia geniculata Ingham.

A.106268
a-b
Seaborne, M.V.J. Collection, 1980.
Crugan Mudstone Formation (basal), Rawtheyan Stage, Ashgill Series, Ordovician; Crugan Farm (small laneside quarry 150m W.), Llanbedrog (1km N.E. of church), Gwynedd, Wales, grid ref: NGR SH 3332341.
Identified, Price, D., 1980, as Dindymene longicaudata Kielan; cranidium (incomplete). Internal mould; external mould.
Listed, Price, D., 1981, Geol. J., 16, p.203, table 1, as Dindymene longicaudata Kielan.

A.106265
Seaborne, M.V.J. Collection, 1980.
Crugan Mudstone Formation (basal), Rawtheyan Stage, Ashgill Series, Ordovician; Crugan Farm (small laneside quarry 150m W.), Llanbedrog (1km N.E. of church), Gwynedd, Wales, grid ref: NGR SH 3332341.
Identified, Price, D., 1980, as Arthrorhachis tarda Barrande; articulated exoskelton. External mould.
Listed, +Arthrorhachis +tarda (Barrande), Price, D., 1981, Geol. J., 16, p.203, table 1.

A.106263
Seaborne, M.V.J. Collection, 1980.
Crugan Mudstone Formation (basal), Rawtheyan Stage, Ashgill Series, Ordovician; Crugan Farm (small laneside quarry 150m W.), Llanbedrog (1km N.E. of church), Gwynedd, Wales, grid ref: NGR SH 3332341.
Identified, Price, D., 1980, as Trilobite Pseudosphaerexochus seabornei Price; pygidium. Internal mould.
Fig'd, paratype, Price, D., 1981, Geol. J., 16, p.211, fig.3c, as trilobite Pseudosphaerexochus seabornei Price.

A.106264
Seaborne, M.V.J. Collection, 1980.
Crugan Mudstone Formation (basal), Rawtheyan Stage, Ashgill Series, Ordovician; Crugan Farm (small laneside quarry 150m W.), Llanbedrog (1km N.E. of church), Gwynedd, Wales, grid ref: NGR SH 3332341.
Identified, Price, D., 1980, as Trilobite Duftonia geniculata Ingham; articulated exoskeleton (incomplete). Internal mould.
Listed, Price, D., 1981, Geol. J., 16, p.203, table 1, as trilobite Duftonia geniculata Ingham.

A.106265
Seaborne, M.V.J. Collection, 1980.
Crugan Mudstone Formation (basal), Rawtheyan Stage, Ashgill Series, Ordovician; Crugan Farm (small laneside quarry 150m W.), Llanbedrog (1km N.E. of church), Gwynedd, Wales, grid ref: NGR SH 3332341.
Identified, Price, D., 1980, as Trilobite Arthrorhachis tarda Barrande; articulated exoskelton. External mould.
Listed, Price, D., 1981, Geol. J., 16, p.203, table 1, as trilobite Arthrorhachis tarda (Barrande).

A.106267
a-b (part and counterpart A.106267a on same block as A.106268b, A.106268a on same block as A.106267b)
Seaborne, M.V.J. Collection, 1980.
Crugan Mudstone Formation (basal), Rawtheyan Stage, Ashgill Series, Ordovician; Crugan Farm (small laneside quarry 150m W.), Llanbedrog (1km N.E. of church), Gwynedd, Wales, grid ref: NGR SH 3332341.
Identified, Price, D., 1980, as Trilobite Dindymene longicaudata Kielan; articulated, thorax, pygidium. Internal mould; external mould.
Fig'd, part b (cast) Price, D., 1981, Geol. J., 16, p.211, fig.3i, as trilobite Dindymene longicaudata Kielan.

A.106268
a-b (Part and counterpart; A.106268a on same block as A.106267b, A.106268b on same block as A.106267a)
Seaborne, M.V.J. Collection, 1980.
Crugan Mudstone Formation (basal), Rawtheyan Stage, Ashgill Series, Ordovician; Crugan Farm (small laneside quarry 150m W.), Llanbedrog (1km N.E. of church), Gwynedd, Wales, grid ref: NGR SH 3332341.
Identified, Price, D., 1980, as Trilobite Dindymene longicaudata Kielan; cranidium (incomplete). Internal mould; external mould.
Listed, Price, D., 1981, Geol. J., 16, p.203, table 1, as trilobite Dindymene longicaudata Kielan.

SM Brachiopod

DISCINA

Skiddaw Slates; Shap;
Ellergill Beds; Thornship Beck, Shap, Westmorland.
Fig'd, Postlethwaite, 1906 Geol. English Lake District, 2 nd Edition, p.27 pl. v fig.15, Discina? sp. — A.35829 FIG'D a.h.9

LINGULA

Skiddaw Slates; Dodd Wood, Keswick, Cumberland.
Fig'd, Postlethwaite, 1906 Geol. English Lake District, 2 nd Edition, p.24 pl. v fig.9, Lingula sp. or Lingula brevis Portlock (probably). — A.35830 FIG'D a.h.9

Skiddaw Slates; Outerside, Keswick, Cumberland.
Fig'd, Postlethwaite, 1897 Geol. English Lake District, p.18 pl. ii figs.11, 11 a, Lingula sp. — A.35832 FIG'D a.h.9

brevis

Skiddaw Slates; Outerside, Keswick, Cumberland.
Identified, Nicholson, Lingula brevis Portlock. — A.17689 xxxiv.t.47

Skiddaw Slates; Dodd Wood, Keswick, Cumberland.
Fig'd, Postlethwaite, 1906 Geol. English Lake District, 2 nd Edition, p.24 pl. v fig.9, Lingula sp. or Lingula brevis Portlock (probably). — A.35830 FIG'D a.h.9

Skiddaw Slates; Outerside, Keswick, Cumberland.
Fig'd, Postlethwaite, 1906 Geol. English Lake District, p.26 pl. v fig.14, Lingula brevis Portlock. — A.35831 TYPE, FIG'D a.h.9

dalii

Skiddaw Slates; Outerside, Keswick, Cumberland.
Holotype, fig'd, Postlethwaite, 1906 Geol. English Lake District, 2 nd Edition pl.23 pl. iv fig.4, Lingula dalii Postlethwaite. — A.35833 TYPE, FIG'D a.h.9

hughesii

Skiddaw Slates; Outerside, Keswick, Cumberland.
Holotype, fig'd, Postlethwaite, 1906 Geol. English Lake District, 2 nd Edition, p.22 pl. iv fig.3, Lingula hughesii Postlethwaite. — A.35834 TYPE, FIG'D a.h.9

marri

Skiddaw Slate (close to the junction with the Borrowdale Volcanic Series, labelled by Marr "about 1 inch" off the junction); Hollows Grange, Borrowdale, Keswick, Lake District.
Mentioned, lectotype (selected as), Cocks, 1978 Review British Lower Palaeozoic Brachiopods, Mon. Pal. Soc. p.9, 'Lingula' marri Postlethwaite, 1897 nom. dub. — A.35835 TYPE, FIG'D a.h.9

marrii

Skiddaw Slate (close to the junction with the Borrowdale Volcanic Series, labelled by Marr "about 1 inch" off the junction); Hollows Grange, Borrowdale, Keswick, Lake District.
Fig'd, Postlethwaite, 1906 Geol. English Lake District, 2 nd Edition, p.25 pl. v

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SM Brachiopod

(LINGULA)
(marrii)
fig.10, Lingula marrii Postlethwaite;
('Lingula' marri Postlethwaite, 1897 nom. dub.). — A.35835 TYPE, FIG'D a.h.9

nicholsoni

Skiddaw Slates; Outerside, Keswick, Cumberland.
Holotype, fig'd, Postlethwaite, 1897 Geol. English Lake District, p.18 pl. ii figs.10, 10 a, Lingula nicholsoni Postlethwaite;
(Lingula brevis Portlock). — A.35831 TYPE, FIG'D a.h.9

Corwen, Diffwys, Pont-y-Glyn.
Longvillian,
Trilobite Platylichas nodulosus (McCoy); (W. of Corwen). A.41346 store: xxxii.c.5

Corwen, Pont-y-Glyn-Diffwys.
Longvillian,
Trilobite Platylichas nodulosus (McCoy); A.41346 store: xxxii.c.5

Denbighshire, Corwen, Diffwys, Pont-y-Glyn.
Longvillian,
Trilobite Platylichas nodulosus (McCoy); (W. of Corwen). A.41346 store: xxxii.c.5

Denbighshire, Trawsnant, Afon Serw.
Arenig Fach Formation,
Trilobite Platylichas sp.;
(gorge), grid ref: SH80554332. A.70513 store: 9.137
(gorge), grid ref: SH80554332. A.70553-70555 store: 9.137
(gorge), grid ref: SH80554332. A.70571 store: 9.138
(gorge), grid ref: SH80554332. A.70754-70757 store: 9.138
(gorge), grid ref: SH80554332. A.70774-70778 store: 9.138
(gorge), grid ref: SH80554332. A.70781 store: 9.139
(gorge), grid ref: SH 80554332. A.70818-70821 store: 9.139
(gorge), grid ref: SH 80554332. A.70831-70836 store: 9.140
(gorge), grid ref: SH 80554332. A.70842 store: 9.140
(gorge), grid ref: SH 80554332. A.70847-70848 store: 9.140

Gwynedd, Llanystwmdwy, Afon Dwyfach.
Ashgill Series,
Trilobite ?Platylichas glenos Whittington;
(east bank), (1.4 km N. N.W.), grid ref: NGR SH 46823976. A.106556 store: 9.512
(east bank), (1.4 km N. N.W.), grid ref: NGR SH 46823976. A.106576 store: 9.513

Ireland, Waterford Co., Newtown Head.
Ordovician,
Trilobite Platylichas sp. (early species scarcely distinguishable from Conolichas); A.16150 store: a.e.8

Lake District, Ashgill.
Ordovician,
Trilobite Platylichas laxatus (McCoy, 1846); (S.W. bank), (S.), grid ref: NGR SD 26899535, loc: loc.31a, (15m N.W. of waterfall). A.98983 store: 9.100

Lake District, Foul Scrow.
Ordovician,
Trilobite Platylichas laxatus (McCoy, 1846); (southern end), (south), grid ref: NGR SD 29409758, loc: loc.24b, (18m at 2d from Stepping Stones over Mealy Gill). A.98916 store: 9.99

Lake District, Kentmere Hall.
Ordovician,
Trilobite Platylichas glenos Whittington, 1962; (300m at 13d south of west), (S), grid ref: NGR NY 44830414, loc: loc.13b. A.98446 store: 9.94

Lake District, Stockdale Beck, Brow Gill.
Ordovician,
Trilobite Platylichas laxatus (McCoy, 1846);
(south bank), (50m upstream of junction), (S), grid ref: NGR NY 49250559, loc: loc.4e. A.98316 store: 9.92
(south bank), (58m upstream of junction), (S), grid ref: NGR NY 49250559, loc: loc.4f. A.98374-98375 store: 9.93

Lake District, Stockdale Beck/Brow Gill junction.
Ordovician,
Trilobite Platylichas laxatus (McCoy, 1846); (390m WNW), (S), grid ref: NGR NY 48820569, loc: loc. 8a, (screes below westernmost quarry). A.98202 store: 9.90

Lake District, Stumfell Howe.
Ordovician,
Trilobite Platylichas lachrymus McNamara ms, 1975; (S), grid ref: NGR NY 44110435, loc: loc.14a, (eastern side of crag). A.98470 store: 9.94

Lake District, Sunny Brow, Limestone Hill.
Ordovician,
Trilobite Platylichas laxatus (McCoy, 1846); (south side), (320m west, at 261d), (south), grid ref: NGR NY 34000037, loc: loc.27a. A.98919 store: 9.99

Lake District, Troutbeck Church.
Ordovician,
Trilobite Platylichas laxatus (McCoy, 1846); (1780m at 53d from), (S.), grid ref: NGR NY 42700390, loc: loc. 18a, (east of Garbourn Road). A.98693 store: 9.96

Lake District, Troutbeck Church, Garbourn Nook.
Ordovician,
Trilobite Platylichas laxatus (McCoy, 1846);
(2520m at 55d from), (S.), grid ref: NGR NY 43340428, loc: loc. 19. A.98814 store: 9.98
(2520m at 55d from), (S.), grid ref: NGR NY 43340428, loc: loc. 19. A.98822 store: 9.98
(2520m at 55d from), (S.), grid ref: NGR NY 43340428, loc: loc. 19. A.98831 store: 9.98
(2520m at 55d from), (S.), grid ref: NGR NY 43340428, loc: loc. 19. A.98850 store: 9.98

NOTES AND NEWS

compiled by Tony Cross

Recent developments in mineralogy at the National Museum of Wales by R.E. Bevins.

In 1983, one of the most important private mineral collections in Britain was purchased by the National Museum of Wales. The collection, made by Dr. Robert J. King of Leicester University, comprises over 10,500 registered specimens, approximately 3,500 reserve specimens, numerous unidentified/problematical specimens, and a large amount of research material, all accompanied by extensive documentation. Although much of the material was collected by Dr. King himself, he also acquired a number of significant old collections, including those of Dr. H.F. Harwood of Deganwy, Wilbert Goodchild of Threlkeld, and Raymond Walsh of Blackpool. Other highlights include an extensive, and possibly unique, world-wide collection of cassiterites, and an important suite of fluorites, containing exceptional Weardale specimens (see King, 1982a). The collection has greatly enhanced the National Museum's existing collection and, as well as containing many Welsh specimens, there is a large amount of exhibition quality material.

A number of specimens have added to the National Museum's small, but increasing, type, figured and cited mineral specimen collection.

Dr. King has now retired from Leicester and has been appointed Honorary Research Associate in the Department of Geology at the National Museum of Wales, where he is currently curating the R.J. King Mineral Collection. This is clearly of enormous value to the National Museum for not only has the collection been acquired but also the Museum now has the benefit of his curatorial and conservational expertise. Dr. King has recently published several articles on mineral conservation in the Journal of the Russell Society (King, 1982b, 1982c) and he will continue to edit this journal from Cardiff.

The National Museum intends to publish, in separate parts within its Geological Series, a catalogue of the R.J. King Mineral Collection, the first part of which was published (King, 1981) as a supplement to the Geological Curator. A catalogue of the fluorites will shortly be ready for publication. All the parts will be available separately, for a small charge, from the National Museum of Wales.

The acquisition of the collection comes at a time of major redevelopment of the Department of Geology in Cardiff. By the end of 1984 the entire geological collections will have been housed in improved storage conditions. The R.J. King Mineral Collection has immediately been housed in new compacta-system storage units and after five months of sorting is now fully accessible. The storage facilities and geological collections of the Department may be viewed at the forthcoming Geological Curators Group meeting on December 7th, 1984. The mineral collection is, of course, available for study by bona fide research workers by prior appointment with either Dr. R.E. Bevins or Dr. R.J. King.

References

King, R.J. 1981. A catalogue of the R.J. King Mineral Collection:
Part 1 - Cassiterite specimens. Geological Curator, 3(2/3), (supplement).

King, R.J. 1982a. The Boltsburn mine, Weardale, County Durham, England. Min. Record, 13, 5-18.

King, R.J. 1982b. Care of minerals. Section 1. Cleaning of minerals. J1 Russell Soc., 1(1), -53

King, R.J. 1982c. Care of minerals. Section 2. The development of minerals. J1 Russell Soc., 1(2), 54-77.

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"THE NAUTILUS AND THE AMMONITE", A POEM BY ERNEST WESTLAKE (1855-1922) by J.B. Delair.

In addition to the surviving series of geological field note-books compiled by the late Ernest Westlake of Fordingbridge, Hampshire --- of which a general synopsis was attempted by the present writer in 1981 (1) --- is a large mass of miscellaneous memoranda, jottings, drawings, and correspondence concerning a great variety of geological matters ranging from the fundamental to the trivial. As might be expected, some are simply direct copies of published statements by leading Victorian and Edwardian authorities of interest to Westlake at the time, but others are original field observations or drawings of sections seen on site; and there is personal account of a three day excursion to Weymouth and Portland made in company with Blake and Hudleston and members of the Geologists' Association in 1879 (2). Yet other items constitute mere literary diversions or amusements, one such being the following hitherto unpublished poem.

In view of the previous articles in this journal touching upon the use of ammonites and other fossils as decorative architectural features during the 18th and 19th centuries (3), the inclusion here of this poem can, perhaps, be justified as illustrative of another example of the general Victorian interest in the denizens of former ages, as aroused by the then comparatively young and widely popularised science of geology. The poem was written during the 1880s (exact date unknown).

The Nautilus and the Ammonite

1. The Nautilus and the Ammonite,
   Were launched in friendly strife,
   Each sent to float in its tiny boat,
   On the wide, wild sea of life.

2. For each could swim on the ocean's brine,
   And when wearied its sails would furl,
   And sink to sleep in the great sea deep,
   In its palace all of pearl.

3. And their was a bliss more fair than this,
   That we feel in our colder times,
   For they were rife in a tropic life,
   In a brighter and better clime.

4. They swam amid isles where summer smiles,
   No wintry winds annoy,
   Whose groves are palm, where air is balm,
   When life is only joy.

5. They sailed all day through creek and bay,
And traversed the ocean deep,
And at night sank to a coral bank,
In its fairy bowers to sleep.

6. And the monsters vast of ages past,
They beheld in their ocean caves,
They saw they ride in their power and pride,
And sink to their deep sea graves.

7. And hand in hand from strand to strand,
They sailed in mirth and glee,
These fairy shells with their crystal cells,
Twin creatures of the sea.

8. And they came at last to a sea long past,
But as they reached its shores,
The Almighty's breath spoke out in death,
And the Ammonite lived no more.

9. And the Nautilus now in its shelly prow,
As over the deep it strays,
Still seems to seek in bay and creek,
Its companion of other days.

10. And thus do we in life's stormy sea,
As we roam from shore to shore,
While tempest tost, seek the loved and lost,
But find them on earth no more.

11. Yet the hope how sweet again to meet,
As we look to a distant strand,
While heart finds heart and no more they part,
To meet again in a better land.

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Notes and References.

1. "Ernest Westlake (1855-1922), Geologist and Prehistorian: with a synopsis of the contents of his field notebooks", by J. B. Delair: 1981 G. C. G., vol. 3, no: 2-3, pp. 133-152.

2. It is hoped to publish this, with its interesting sidelights on proceedings, in due course.

3. "Ammonites in Architecture", by M. Kerney: 1982. G. C. G., vol. 3, no. 4. pp. 232-233; "Oatlands Park Grotto and its Ammonite Fossils", by M. E. Barton and J. B. Delair: 1982 G. C. G., vol. 3, no: 6, pp. 375-387.

J. B. Delair,
19 Cumnor Road,
Wootton, Boar's Hill,
Nr. Oxford, Oxon.

First Scottish Dinosaur Found.

Dinosaurs are practically unknown from Scotland, since much of what now constitutes Scotland was land 170 million years ago, unsuitable for preserving fossils of these spectacular animals. The new find is of a footprint left on mudflats in Skye in Middle Jurassic times.

Discovery

In June, 1982, a single, large footprint almost half a metre long, was discovered on a fallen block of limestone below the cliffs south of Rudha nam Braithairean, Trotternish, Skye by J. E. Andrews and J. D. Hudson of Leicester University. The specimen was collected and prepared the following year by S. P. Wood of Mr. Wood's Fossils, Livingston. It is now on display in the Hunterian Museum of Glasgow University, who acquired it with the aid of a Treasury Grant.

Which dinosaur was it?

British Jurassic rocks have yielded remains of two quite different dinosaurs which walked on their hind legs and had three toes. One, a large 'lizard-hipped' dinosaur - Megalosaurus - was a ferocious flesh-eater and had sharp claws on the digits of its hind feet. The other was an equally large 'bird-hipped' dinosaur - Camptosaurus - which was a vegetarian. This animal had much blunter claws on its toes. The relatively soft outline to the terminations of the toe impressions on the footprint suggest that an animal like Camptosaurus may have been responsible. Slight variations in the set of the toe impressions suggest that the imprint was made by the right foot.

Camptosaurus is closely related to the later 140 million year old Iguanodon. A six and a half metres long trackway left by this animal in what is now Dorset, is also on display in the Hunterian Museum.

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Glasgow,
G12 8QQ.

Society for the History of Natural History

At a Special General Meeting on the 28th March 1983 the Society for the Bibliography of Natural History, founded in 1936, decided to change its title to the Society for the History of Natural History. The decision was not taken lightly, and had been the subject of deliberation and consultation over a number of years. The word 'bibliography' had originally been chosen to cover members' researches into the dates of publication of taxonomically important works. Much of that task has now been completed, and the specialised current use of the word 'bibliography' in modern librarianship and the tremendous upsurge in interest in the history of science in the last decade indicated that a change in name was desirable. The motion proposing the change was carried by a large majority. The Society is always pleased to welcome new members, and its activities are particularly relevant to those involved with natural history collections, (including palaeontological and geological) and the life and work of collectors. A leaflet on the Society's activities and publications is enclosed with this copy of Geological Curator.

MINUTES IN A PHONE BOX - an appendix

Following the curious discovery of the minutes of the Lapworth Club in a telephone kiosk Geol. Cur. Vol. 3, no. 8. p. 515). Hugh Torrens sent the minute book to Isles Strachan (Dept. of Geol. Sciences, University of Birmingham) who wrote as follows;

Dear Hugh,
Many thanks indeed for the book. I delayed acknowledging it until I had had a chance to speak to Prof. Shotton about it. When it arrived, I looked on my shelf for the volumes which I had had some years ago from Prof. Wills and found that the first one was a notebook without its covers but starting "Meeting of the Lapworth Club. Oct 24th 1935" and the minutes were signed F. W. Shotton. So it seems likely that there is nothing missing now! There is another minute book for the Lapworth Geological Society which runs from Oct 1932 - May 1937 so the two groups are quite distinct and one of these days Prof. Shotton may get around to writing a history of the Club which was founded as "an inner body".

Footprint of ? Camptosaurus. See item first Scottish Dinosaur found.

REVIEW: NATURE IN WALES, NEW SERIES, VOLUME ONE, 1982

Price 75p. (+ postage). Obtainable from the National Museum of Wales, Cathays Park, Cardiff, CF1 3NP.

As a mapping geologist who has spent a large proportion of his career walking from outcrop to outcrop in a variety of spectacular natural settings around the world, I often feel slightly guilty that I remain so ill-informed about so many aspects of nature outside my narrow professional field. I envy those of my colleagues who identify with ease birds, insects, plants and fifty-seven varieties of edible fungi at a glance; but in spite of good intentions and the occasional purchase of a supposedly infallible field guide, I have so far failed to improve my performance. My guilt is further compounded by reading the first of two parts of a new series of Nature in Wales, as I suspect that most of the readers who will delight in this new series would be only too pleased to occupy my boots and actually be paid to spend several months of the year traversing the slopes of the Carneddau or Snowdon.

Nature in Wales is not a new journal; it was first published in Spring 1955 by the West Wales Field Society, shortly to be joined by the North Wales Naturalists' Trust and several other Trusts. The Journal had the distinction of having its first two cover designs drawn by Charles Tunnicliffe. Eventually, in 1981, the West Wales and North Wales Naturalists' Trusts approached the National Museum of Wales for help and the new series is published by the Museum and issued twice a year, in Spring and Autumn.

The design and format of the new series is attractive, even expensive looking, though I was unable to find any indication of the price on either of the first two parts. The contents are extremely wide-ranging, as indeed they have to be in order to justify the Journal's subtitle, A Natural Science Journal for Wales and the Borderland. The aim is clearly to achieve a reasonable balance between say descriptive papers on rare or unusual organisms, information on contemporary countryside problems and on the work of research organisations concerned with the biology or geology of the Principality, biographical essays, reviews and correspondence. On the evidence of the first two parts, an excellent mix is being achieved.

In Part one I found the annotated inventory of National Nature Reserves in Wales particularly useful and the detailed survey of three of these reserves, in Part two, equally so. The explanation of The Wildlife and Countryside Act of 1981 in Part one is a well written and informative historical survey and explanation and an article on Pauropoda, which did not excite me too much in the list of contents, proved to have beautifully annotated photographs. The profile of Evan Roberts, sometime quarryman and subsequently Head Warden with the Nature Conservancy Council in North Wales, again brought home to me my own inadequacies but admiration for his achievements strengthened my resolve to do better in the future. An essay review of tidal power from the Severn Estuary, a description of the PreCambrian fossils of the Carmarthen area, an article on Edward Lhuyd and 'A Natural History of Wales', an article and systematic list of the birds of Denbighshire, notes on new mineral species from Wales, a readers' guide to Charles Darwin, a useful list of addresses of scientific, conservation and educational bodies in Wales and a variety of field notes and book reviews are just some of the other contents which, in my view, make up a highly successful balancing act. Of course, a self-confessed, failed amateur naturalist may not be the best person to review 'Nature in Wales', but almost without exception the contents attracted and retained my attention. I still don't know how much the magazine costs but with its high standard of production and variety of content, I suspect that it is very good value for money. I hope it gets the support it deserves.

A.J. Reedman.

Geology in Museums: A Bibliography and Index.

Compiled by T. Sharpe,

National Museum of Wales, Cardiff, 1983.
Geological Series No. 6., 1983: 128pp. price £2.50.
(£3.70 by post)

This bibliography maintains the tradition of valuable reference works produced by the Dept. of Geology at the National Museum of Wales. The commitment at Cardiff to the production of bibliographical and museological references since the days of F.J. North is referred to by Mike Bassett in a short explanatory Foreword. In a separate section, Howard Brunton also explains the circumstances behind the compilation of this bibliography, which arose partly from an invitation to the Geological Curators Group to contribute such a section for the Museums Association planned Manual of Curation and partly from the author's own studies and interest. The implementation of the idea has been achieved through the co-operation of the National Museum of Wales and the Museum Documentation Association with the use of a computer to prepare and sort the entries.

The work is divided into two sections: the list of references (pp. 8-62) (-- said to be over a thousand -- but who has time to count them Tom ? -- we'll all believe you!), and an Index based on keywords (pp 66 - 128). The keywords essentially cover the different facets of geology and museum management and curation; within these keywords authors are listed alphabetically and their separate contributions by the year. Cross-references to other keywords at all levels in which a particular reference is cited greatly facilitates use of this bibliography.

In his Introduction Tom Sharpe has explained that subjects generally dealt with in other museological, or geological bibliographies have been excluded, or reduced to a few initial entries given to provide a path into the wider field of particular subjects. He also accounted for the omission of references to catalogues of particular museum collections, or of type and figured material since these had been partly provided by other references (see Bassett, 1975; Cleevely, 1983) and that they really needed to be dealt with in a separate bibliography.

Having outlined the basis of the work, you may be interested to learn whether it works; I consider that it does. It is impossible to cater for all the possible ramifications that the combination of geological and museum subjects would require for complete retrieval, particularly with the acknowledged limitations of keyword systems. The author's selection works quite adequately and it must be remembered that he set out to provide a basic framework for us all to use and augment, within a relatively short period between undertaking the task and its fulfillment. However, it is probably in the matter of exclusions and omissions of references and the choice of subjects as keywords that users will have personal quibbles. Being a rather peculiar type of floppy disk, I must confess to having primarily used the reference section when looking for particular information that I know has been published rather than refer to the keywords. The importance of Dinosaurs over all other fossils is demonstrated by the fact that they merit a separate section (but incidentally neither of the friendly rivals Alan Charig, or Bev Halstead feature in the list of titles!) whereas all other groups appear under section in Palaeontology.

Before producing lists of additional references for Tom to include in his future supplements and revisions, it is worth waiting for the appearance of the long awaited curation manuals undertaken by the Museums Association and also the

GCG. Once these have appeared it will be possible to determine those areas that have not been catered for. Suggestions that occur to me are the subjects of anthropology (Tom includes a reference on palaeopathology), dating; history; stratigraphy (especially references of the various codes and system reports) and I would also like to see a section listing text-books following F. J. North's earlier guide.

The author and poet Geoffrey Grigson commented that one should not review books unless you could comment favourably and implied elsewhere that the reviewer should understand the circumstances of the subject and those relating to the preparation of the book. Having an inkling of the difficulties and traumas that Tom Sharpe will have experienced, I can congratulate him on achieving his goal and producing a useful basic reference to geology in the museum. He was fortunate in his publishers who had the sense of timing which is essential to good publishing coupled as well with the resources, readiness and enterprise to ensure that the outcome was within the means of potential users. Grigson also went on to say that you should not review unless you wanted the book yourself, whilst I was fortunate in already having a copy, if you haven't start writing your cheque to the National Museum of Wales, for it will be handy having this bibliography around.

R. J. Cleevely,

Bassett, M. G. 1975. Bibliography and Index of catalogues of type, figured and cited fossils in museums in Great Britain and Ireland. Palaeontology, 18 (4): 753-73.

Cleevely, R. J. 1983. World Palaeontological Collections Brit. Mus. (Nat. Hist.) & Mansell Ltd., London: 365pp. (see bibliography of published catalogues pp. 26-37).

G. C. G. Meetings held in the first ten years (compiled by Alan Howell, Bolton Museum)

Date	Venue	Topic
15th February, 1974	Leicester Museum	Meeting of Museum geologists
17th May, 1974	Geological Society, London.	Inaugural Meeting.
18th October, 1974	Geological Museum, London.	The Story of the Earth and future display plans
13th December, 1974	Geological Society, London.	Accessioning Procedures Seminar: A. G. M.
20th - 21st March, 1975	Sedgwick Museum, Cambridge	Geological Cataloguing Workshop.
18th - 19th September, 1975	Sheffield	Geological Site Documentation (with N. C. C. & IRGMA)
12th December, 1975	Leicester Museum & University	New displays, facilities; A. G. M.
12th March, 1976	Birmingham Museum	Replication of Fossil Vertebrates
24th September, 1976	Yorkshire Museum, York.	Mineral Collections in Small Museums
10th December, 1976	B. M. (N. H.)	Pyrite Decay; A. G. M.
4th February, 1977	Merseyside	Geological Information Services and Sources in Museums (with G. I. G.)
22nd & 23rd September, 1977	Merseyside	The Function of Local Natural History Collections (with B. C. G. & S. A.)
16th December, 1977	Bristol & Bath Museums	Collections of Host Institutions & A. G. M.
29th March - 1st April, 1978	National Museum of Wales, Cardiff.	Curating in Palaeontology (with Pal. Ass.)
8th July, 1978	R. S. M. & I. G. S. Edinburgh	Geological Conservation; Collections & facilities of host institutions (part of M. A. Conference)
8th December, 1978	Hull	Geological Collections in Hull, Past, Present & Future; A. G. M.
19th - 20th March, 1979	Geological Society, London.	Future of Geological Conservation in the British Isles (with N. C. C. & Geol. Soc.)
4th - 6th April, 1979	B. M. (N. H.)	History of Museum Collections in Natural Sciences (with S. B. N. H. and B. C. G.)
11th July, 1979	Southampton University	Geol. Collections in Hampshire (part of M. A. conf.)

21st September, 1979	Sheffield University	Curation of University Research Collections (part of Joint Geological Societies meeting)
30th November, 1979	Sedgwick Museum, Cambridge	Standards of Curation; A. G. M.
18th April, 1980	Hancock Museum, Newcastle.	Recent Developments in the North East.
16th & 17th June, 1980	I. G. S. Leeds	Standards & Terminology of Geological Documentation
17th November, 1980	B. M. (N. H.)	Mineralogical Terminology (with M. D. A.)
4th December, 1980	Hunterian Museum, Glasgow	Geology for sale; A. G. M.
4th June, 1981	B. M. (N. H.)	Geological Specimen Card Workshop (with M. D. A.)
22nd September, 1981	Manchester Museum	Collections Research (part of M. A. Conference)
8th December, 1981	Birmingham University Geol. Dept.	The University's Collection; Geology & Archaeology; A. G. M.
23rd April, 1982	Stoke on Trent	Geological Displays in the '80s.
4th June, 1982	Geological Museum, London.	Mineral Identification Workshop
8th & 9th September, 1982	B. M. (N. H.)	Vertebrate Palaeontology - History of Collections and Curation.
10th December, 1982	Oxford University Museum	Geological Displays & associated problems; A. G. M.
29th April, 1983	Merseyside	Geology Teaching in and around the Museum (with A. T. G.)
22nd - 23rd June, 1983	B. M. (N. H.)	Techniques Demonstrations.
9th - 10th September, 1983	Buxton Museum	History of Collections; Documentation; field trip.
20th September, 1983	Swansea	Field trip to coincide with M. A. Conference
9th December, 1983	Warwick Museum	History of Collections; A. G. M.
15th February, 1984	Leicester Museum	G. C. G. tenth anniversary meeting.

THE GEOLOGICAL CURATORS GROUP

The purpose of the Group is to improve the status of geology in museums and similar institutions, and to improve the standard of geological curation in general, by:

- holding meetings to promote the exchange of information

- providing information and advice on all matters relating to geology in museums

- the surveillance of collections of geological specimens and information with a view to ensuring their well being

- the preparation of a code of practice for the curation and deployment of collections

- the advancement of the documentation and conservation of geological sites

- initiating and conducting surveys relating to the aims of the Group