

GCGG

THE GEOLOGICAL CURATOR

VOLUME 5 No. 5

Issue 2 for 1988



**GEOLOGICAL COLLECTORS AND MUSEUMS IN CHELTENHAM
1810-1988**

GEOLOGICAL CURATORS' GROUP

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

- holding meetings to promote the exchange of information.
- providing information and advice on all matters relating to geology in museum.
- 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.

1990 COMMITTEE

Chairman	John A. Cooper, Keeper of Geology, Booth Museum of Natural History, 194 Dyke Road, Brighton BN1 5AA (Tel. 0273 552586).
Secretary	Simon J. Knell, Keeper of Natural History, Scunthorpe Borough Museum and Art Gallery, Oswald Road, Scunthorpe DN15 7BD (Tel. 0724 843533).
Treasurer/ Membership Secretary	Andrew Newman, Hancock Museum, Barras Bridge, Newcastle-upon-Tyne NE2 4PT (Tel. 091 222 7418).
Editor	Peter R. Crowther, Curator of Geology, City of Bristol Museum and Art Gallery, Queen's Road, Bristol BS8 1RL (Tel. 0272 223592).
Recorder	John A. Nudds, The Manchester Museum, University of Manchester, Oxford Road, Manchester M13 9PL (Tel. 061 273 3333 ext 3101).
Public Relations Officer	Philip S. Doughty, Keeper of Geology, Ulster Museum, Botanic Gardens, Belfast BT9 5AB (Tel. 0232 668251-5).
Minutes Secretary	Diana M. Hawks, Haslemere Educational Museum, High Street, Haslemere GU27 2LA (Tel. 0428 2112).
Committee	Chris Collins, Geology Conservator, Leicestershire Museums, 96 New Walk, Leicester LE1 6TD (Tel. 0533 554100). Monica Price, Assistant Curator, Minerals, Oxford University Museum, Parks Road, Oxford OX1 3PW (Tel. 0865 272967). Amanda Edwards, Curator, Department of Geology, University of Manchester M13 9PL (Tel. 061 275 2000). John Martin, Keeper of Earth Sciences, Leicestershire Museums, 96 New Walk, Leicester LE1 6TD (Tel. 0533 554100).
Co-opted	Rosina Down, (BCG), Department of Zoology, University College, Gower Street, London WC1E 6JB. Michael F. Stanley, (NSGSD), Deputy County Museums Officer, Derbyshire Museums Service, John Turner House, Parkway, Darley Dale, Matlock, Derbyshire DE4 2FW (Tel. 0629 733226). Tom Sharpe, ("Coprolite"), Department of Geology, National Museum of Wales, Cathays Park, Cardiff CF1 3NP (Tel. 0222 397951).

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

Typed by Mrs Judy Marvin, Leicestershire Museums Service.

THE GEOLOGICAL CURATOR

VOLUME 5, NO.5

CONTENTS

CONTENTS	173
FOREWORD	174
COLLECTIONS, COLLECTORS AND MUSEUMS OF NOTE. NO. 55, GEOLOGICAL COLLECTORS AND MUSEUMS IN CHELTENHAM 1810-1988: A CASE HISTORY AND ITS LESSONS by H. S. Torrens and M. A. Taylor	
Introduction	175
The first 'Cheltenham Museums': The Mawe and Tatlow Museum .	176
The Cheltenham Literary and Philosophical Institution Museum . .	177
Early geological collectors in the Cheltenham area (up to 1850) .	179
The development of the CLPI's geological collections	183
The Jenkins family: commercial dealers in Cheltenham	186
The British Association visit of 1856 and its aftermath	187
The Cheltenham Working Naturalists' Association and the Cheltenham Naturalists' Association	189
The Cheltenham College Museum	189
The museum of Cheltenham Ladies College	196
The Cheltenham Natural Science Society	196
The College of Saint Paul and Saint Mary	197
Cheltenham Art Gallery and Museum	197
Conclusions	206
References	207
Appendices	212
BOOK REVIEWS	214

GEOLOGICAL CURATORS' GROUP

August 1990

FOREWORD

When two of the most prolific contributors to the pages of Geological Curator join forces, something exceptional might be expected to result. When both authors are well known for the 'missionary' zeal with which they pursue their commitment to help improve the standards of care and use of geological collections, and have a reputation for utilizing thorough historical research to highlight the origins and shortcomings of present-day curatorial attitudes and resource management, then the focussing of their combined talents on the history of one town's geological heritage is likely to prove of more than local significance. Such is most certainly the case with the Cheltenham story, as told by Hugh Torrens and Mike Taylor.

Here, in a single English town, we can follow the development of almost the entire range of circumstances which led to the cycles of growth and decline of geological collections across 19th and 20th century Britain - private, society, school, college, and local authority museums are all documented. In past issues of this journal and elsewhere, Hugh Torrens has brought to light many sad collection histories in which early enthusiasm was replaced first by indifference, then neglect and finally, all too often, by total destruction. By so doing he has quite deliberately helped to fire a generation of curators with the will to see that professional standards of collection care are raised, resources are increased and public accessibility is improved, in the hope that past tragedies are never repeated.

Mike Taylor is one such curator whose pioneering work as the Area Museum Council for the South West's Geological Officer (from 1983 to 1987) set the pattern for similar peripatetic schemes elsewhere. Here too Cheltenham provides a classic example of how practical advice from a specialist peripatetic curator, coupled with Area Museum Council support, can fire resident non-geological museum staff with an enthusiasm to solve the problems of unwittingly inherited neglect, and instigate an ambitious programme of rescue curation.

There are serious lessons here not only for geological curators but also for museum professionals of other disciplines and for historians of science. Yet the story is just as fascinating (and highly readable) for those whose interests focus on the history of Cheltenham itself or encompass the broad development of British science and society. A similar (if less complete) story could be told about many other towns and cities across the

country, But it is Cheltenham's very good fortune that Hugh Torrens and Mike Taylor chose to devote so much of their skills and energies to documenting the geological heritage of its people and museums.

Peter R. Crowther
Editor, Geological Curators' Group
18 August 1990

GEOLOGICAL COLLECTORS AND MUSEUMS IN CHELTENHAM 1810-1988

A CASE HISTORY AND ITS LESSONS

BY HUGH S. TORRENS AND MICHAEL A. TAYLOR

'Society is very good here - if Lords and Baronets can constitute such. I generally meet 10 or a dozen of the latter and 6 or 8 of the former every evening'! C. H. Parry October 1808 [Bodleian Library Eng. Misc. d 612 p.61].

INTRODUCTION

The geological treasures of at least parts of the Cotswolds had already attracted seventeenth century collectors (Torrens 1982) but became more widely known with the development of Regency Cheltenham. This was especially so after the end of the Napoleonic Wars, when Cheltenham became a nationally and internationally known spa attracting numerous visitors and longer term residents (Hart 1965; Ashton 1983). William Smith (1769-1839), whose work on stratigraphical palaeontology revolutionised the study and search for fossils, had coloured in the geological strata on a map of the surroundings of Cheltenham soon after its publication in 1812 (Cox 1942, p.9). He also described a number of Inferior Oolite fossils from localities in the immediate vicinity, such as Crickley Hill (Smith 1817, pp.95, 98, 104) or Dowdeswell Hill (op. cit., p.107).

Some of the first fossils in the Sowerbys' Mineral Conchology, the major work on British fossils which was inspired by Smith's activities, came from the Cotswolds (e.g. Sowerby 1813, p.47). Many of these specimens were sent to James Sowerby by an enthusiastic collector named Richard Cowling Taylor (1789-1851). Taylor had been trained as a land surveyor between July 1805 and 1811 at Stow-on-the-Wold under Edward Webb (1751-1828), as had William Smith earlier (Gents Mag. NS 37, 1852, pp. 201-205, 218). Taylor then became one of Smith's pupils as well, to emphasise the close connections between the three.

These pioneers started off the long and highly episodic history of geological collectors and collections in Cheltenham. This story starts with the early commercial shops-cum-museums, formed as the first 'Cheltenham Museums' in the 1810s. The Cheltenham Literary and Philosophical Institution of 1833-1861, a characteristic private joint-stock institution, served the upper and middle classes, and some of the working classes following its amalgamation with the Cheltenham Institute in 1844-1845 (13th Report CLPI, p.6). Some members of this institution regrouped to form the Cheltenham Working Naturalists' Association of 1861 (after 1867 the Cheltenham Naturalists' Association). Increasing costs, decreasing interest and the improvements in public transport had all allowed the increasingly popular Cotswold Naturalists'

Field Club of 1846 to put paid to the Institution. Another mid century development was the foundation of the Colleges of St Paul and St Mary in 1849 (Hart 1965, p.213). The mid-Victorian Public Schools, with their organised Naturalists' Societies (so different from Charles Darwin's earlier anarchic bug-hunting at school) are represented by one of the first, the Cheltenham College and its museum, now completely dispersed, but which absorbed most of these earlier collections. Cheltenham Ladies' College too had its own museum. In the late nineteenth century and early twentieth century new social thought and civic legislation gave Cheltenham the present Art Gallery and Museum, and a Teacher Training College (from the amalgamated Colleges of St Paul and St Mary) which both had - and still have - collections formed more or less independently of the earlier ones. The present Cheltenham Museum's collection was actively used and added to in the early twentieth century but later lapsed into disuse and neglect. It has recently been revived under a scheme of pastoral curation.

Thus the story of Cheltenham's geological collections, with obligatory Commercial Museums found in such resorts, its Literary and Philosophical Institution, and more Working-Class Societies, Public Schools, Civic Museum and now a College of Further Education, repeats in one town the major themes and trends of British provincial natural science collections over the last 200 years (Allen 1976; Brears 1984; Lewis 1984a, b; Foster 1984). Sadly, as in so many other cases, it is also a story of the accumulation and then neglect, dispersal and loss of what were once important collections of fossils and minerals.

[Note. In what follows HST deals with all nineteenth century collections (the first Museums, Institution, Naturalists' Association and Natural Science Society, Ladies College and Cheltenham College's collections and their dispersal) while MAT deals with those of the twentieth century (including the present Art Gallery and Museum and the College of St Paul and St Mary) and discusses the lessons for the future to be drawn from recent pastoral curation at the Art Gallery and Museum. Far more remains to be discovered and any information will be gratefully received by the authors, especially concerning the fates of more recently dispersed items.]

Abbreviations used in this article: AMCSW, Area Museum Council for the South West; BM(NH), British Museum (Natural History); BRSMG, Bristol City Museum and Art Gallery; CCNHS, Cheltenham College Natural History Society; CHLGM, Cheltenham Art Galleries and Museum; CLPI, Cheltenham Literary and Philosophical Institution; CNFC, Cotteswold Naturalists Field Club; GCG, Newsletter of the Geological Curators' Group, later The Geological Curator; Glos N&Q, Gloucestershire Notes and Queries; OUM, Oxford University Museum; Report, Reports of the CCNHS; Report CHLGM, Reports of Cheltenham Art Gallery Subcommittee; Report CLPI, Annual Reports of the CLPI.

THE FIRST 'CHELTENHAM MUSEUMS': THE MAWE AND TATLOW MUSEUM

By the time Smith's discoveries were encouraging the search for fossils in the Cotswolds, Cheltenham had become an early provincial centre for the sale of geological material to visitors. Smith's influence here was widely spread before his own publications appeared (from 1815 on) through the publications of others and the dissemination of his ideas from the Bath area by word of mouth (from 1799). Apart from the active collecting of Cheltenham fossils by people like his pupil R. C. Taylor, another Smithian geologist was busy disseminating his ideas at Cheltenham. This was Charles Henry Parry (1779-1860) who set up in medical practice here, from Bath, in June 1807. Following the announcement that 'coals' had been found in sinking a well there (Bath and Cheltenham Gazette, 8 June 1814; Bath Chronicle, 9 June; Cheltenham Chronicle, 16 June), Parry - who was well informed on Smithian geology through his father (Torrens 1979b, pp.221-222) - urged caution in attempts to mine such 'coal' in the Cheltenham area, both because of possible damage to the Cheltenham Waters and on scientific grounds (Cheltenham Chronicle, 30 June 1814).

As at Bath (on which many of the social stimuli for the development of Cheltenham seem to have been modelled), the first Cheltenham 'museums' were clearly forms of commercial speculation (Torrens 1979b, pp. 226-227). Such operations are often very badly recorded. The first at Cheltenham may have been the 'Cheltenham Museum of Natural and Artificial Curiosities', opened in 1810 by the Finnish artist Jacob Spornberg (1768 - post 1840) (Cheltenham Chronicle, 16 August, 11 October 1810; Blake 1984a, p.14; McKechnie 1971).

The first such properly geological 'museum' in Cheltenham was purpose-built and opened in 1816 by John Mawe (1766-1829), the mineralogist and traveller, and his new son-in-law Anthony Tatlow (1789-1828) (Tatlow 1821) in highly fashionable Montpellier Walk, Cheltenham (Blake 1984b). Both Mawe and Tatlow had come from Derbyshire (Torrens 1989) and, since Mawe's similar establishment at 149 Strand in London was by then flourishing, they decided, after Mawe's daughter Sarah Ann married Anthony Tatlow in 1815, to establish a similar enterprise in



Fig. 1. Label (80 x 48 mm.) on the base of a paperweight supplied c.1830 by the Mawe Museum in Cheltenham (HST collection).

Cheltenham. They soon had another at Matlock Bath in Derbyshire (Monthly Magazine 44, 1817, p.125).

By 1823 the Mawe and Tatlow Museum was the only one listed in the Cheltenham Directory (Pigot 1822, p.50), while by 1826 it was under Royal patronage (Griffith 1826, p.283 and plate) and 'an object of universal attraction'. In July 1828 Tatlow died and the Museum became simply Mawe's Museum (Goding 1863, p.319). It sold a wide variety of geological specimens and ornamental materials as souvenirs, many made of inlaid Derbyshire and foreign marbles, which are listed in their advertisement in the Cheltenham Journal for 17 August 1829, p.3. One, a paperweight in HST's possession, carries the original engraved label of the Museum, c.1830 (Fig.1). The range of goods offered for sale at Mawe's shops can also be seen in the advertising material inserted at the end of Mawe (1832) issued after Mawe's death in 1829, when his widow Sarah Mawe (1767-1846) continued the business (Davies 1834, p.166).

In February 1840 their former assistant in London, James Tennant (1808-1881), bought out the Mawe business in London (British Museum archives, CE4/22 - 8 May 1840), while William Adam (c.1794-1873) and his brother Joseph Adam (died 1870) took over the Mawe Museums in Cheltenham and Matlock in 1839 (Cheltenham Looker On, 18 May 1839, p.320). But the Adams met with limited success financially (Ford 1973) and the Cheltenham Museum - by now known as the Royal Museum - was closed in 1843 (op. cit., 6 May 1843, p.281) and its contents sold by auction between April and October of that year (op. cit., 15 April 1843, p.238; 30 September 1843, p.610). It was then demolished to make way for the Montpellier Exchange (Cheltenham Free Press, 22 July 1843, p.228). The Matlock business continued until December 1850 when Highmore Rosser of Bakewell wrote to tell Sir Henry de la Beche (1796-1855) of Adams' bankruptcy and of the sale, 'when it is thought everything will go cheap', of its contents (De la Beche archive, National Museum of Wales, Cardiff).

THE CHELTENHAM LITERARY AND PHILOSOPHICAL
INSTITUTION MUSEUM

The foundation of the CLPI and its Museum

Commercial enterprises such as these first 'Cheltenham Museums', while clearly a stimulus to the study of geology, were no substitute for a proper scientific institution supported by subscriptions. Attempts were made to promote such a Literary Society in 1814 by Dr Edward Jenner (1749-1823) and a number of other Cheltenham residents (Bath Cheltenham Gazette, 16 February 1814) but these met with little success (Davies 1837; Goding 1863, p.491; Saunders 1982, pp.318-320). It was not until the 1830s that the nationwide popularity of natural history and allied interests encouraged residents to establish in Cheltenham, rather late, a permanent Literary and Philosophical Institution; planning for the building began in 1833. This fine building in the Promenade was designed by R. W. Jearrad (died 1861), built between 1835 and 1836, and formally opened on 30 August 1836 (Anon. 1837; Davies 1843, pp. 130-132).

Cheltenhamians had presumably been stung into some sort of action by notices about the town's intellectual life like that which appeared in October 1828:

'Cheltenham is Attica in architecture, and Boeotia in understanding. It is an elegantly constructed case of fashionable butterflies and evangelical beetles; it is a place where it is deemed that the glare of gas is superior to the glory of the sun, and that man was only made to flutter or to crawl. Its society is composed of the dramatis personae of Shakespeare's *Tempest*, - of fashionable Prosperos, nymphlike Ariels, fox-hunting Trinculos, and evangelical Calibans, struggling for the mastery. Reason abhors a degrading association with them; and what might be a Helicon insults the Muses.

We have a right to be thus severe, because there is not a literary institution in the whole place, and the literary-proprietors assert no work of science is ever called for. As to intellectual matters, its stock is only that of a book-milliner's shop, or a tabernacle tract-office. The lectures of no professors, except those of music or dancing, are ever attended, and it is a capital crime to be known as a writer, and so West Indian is the slavery of the local newspapers, that one of them from prudent motives lately declined noticing the Rev Richard Warner's excellent pamphlet on *Evangelical Preaching*.' (Gents Mag. 98, pp.337-338).

The year after the foundation of the Institution saw the publication of the first book devoted to the local geology, Outline of the Neighbourhood of Cheltenham by Murchison (1834). One of the first Honorary Members, Murchison wrote (p.6) that this book would never 'have ever seen the light, but for the suggestion of several members of the Literary and Philosophical Institution of Cheltenham, who anxiously desired to commence their acquaintance with the Geology of the place of their residence.' His book was dedicated to 'these kind friends'.

It is clear from Murchison's comments that the Institution's museum was then still embryonic (1834, p.20):

'I cannot offer a complete list of the organic remains of the lower shale of the Lias of this neighbourhood, the study of Geology not having yet become sufficiently popular in Cheltenham, to have induced individuals to make systematic collections. We may, however, now indulge in a hope that in a district so very fertile in fossils, some assiduous collectors will soon supply this defect,' adding in a footnote that 'the museum of the Philosophical Institution of Cheltenham, we may presume, will ere long exhibit a complete suite of the fossils of the neighbourhood. In the meantime, I may observe that S. Bendall, the intelligent chemical assistant in Mr Thompson's manufactory of salts [Pearson Thompson (1794-1873), a Cheltenham lawyer, entrepreneur and salts manufacturer of New Bath Road (Blake and Beacham 1982, pp.123-124; and Directories)], has begun to collect in so zealous a manner, that I have little doubt he will soon add many undescribed species to our previous lists. His collection is open to the public.'

Murchison later added in a postscript (p.37) that he had since been sent fossil specimens for study, collected by Messrs Thompson and Holdsworth, which already belonged to the Institution, and other specimens from the Museum of John Bendall (who is presumably related to the S. Bendall in Murchison's notice above). S. Bendall, Baker in the Bath Road, Cheltenham, appears in Cheltenham Directories for 1839 to 1841, and his Museum is also noted in an article in the Cheltenham Annuaire of 1837 (p.33) which, however, continued by observing that Cheltenham was 'still without any good or well arranged collection of the organic remains of the area.' Copeland's article here (1837) is mainly a summary of Murchison's book (1834).

Richard Comfield (1774-1842): first Curator of the CLPI

There has been enormous confusion about Comfield, Blake (1982, p.57) having wrongly given his Christian name as Robert, while he is also described as 'Mr W. Comfield' in a contemporary source (Cheltenham Annuaire for 1837, p.131). To add to this confusion, one 'J. Comfield, Cheltenham' was elected a Corresponding Member of the Botanical Society of London on 6 July 1838 (Anon. 1839, p.103). Allen (1987) identified this man with the Thomas Comfield found in the Directories from 1839 on, as a silversmith and optician at 339 High Street. Thomas Comfield (c.1810-1844), however, only set up shop in Cheltenham early in 1838 (Cheltenham Magazine, 2, 1838, opp. p.352) and died on 31 March 1844 at the sadly early age of 33 (Cheltenham Examiner, 3 April 1844, p.3). He was a son of Richard Comfield. Thomas's will (at Gloucester Record Office; proved 7 August 1844) mentions his wife, two small children and two brothers, Robert Petre and John, and notes that his freehold house at Northampton could be sold by his trustees for the benefit of his family. This provides a first link with Northamptonshire where Richard Comfield was born. As a representative of the newly emerging



A PHILOSOPHER

Sketched by G. Rowe

Fig. 2. Lithograph of Robert Comfield, the first Curator of the Cheltenham Institution, published by George Rowe in 1837. (From a xerox copy of the original formerly in Cheltenham Public Library but now lost!)

professional curators of natural history and science (Torrens 1987), some details of the CLPI's first Curator and his career should be put on record.

Richard Comfield was baptised on 14 May 1774, the son of Thomas and Ann Comfield, at Guilsborough parish church, ten miles NNW of Northampton. His father Thomas (c.1739-1825) had been the master of the village Free School since 1762 (Renton and Renton 1929, p.103). He ran what was clearly an outstanding school, with the help from 1794 of his younger son John (born c.1780). Thomas died on 19 October 1825 (Northampton Mercury, 29 October 1825, 25 May 1900 and 1 June 1900). Richard, his elder son, ran another Academy at what became his house in the Horsemarket, Northampton, first in partnership with a Mr Hague from 1794 (op. cit., 21 June 1794) and then from 1795 on his own account, with Hague's widow running the boarding side of the school (op. cit., 10 January 1795).

Richard Comfield's wide and early interests in science as it was then understood are quite clear. In 1806 he became a country member of the London Chemical Society (Averley 1986, p.111) and in the following year he announced a course of public botanical lectures to be delivered at his school (Northampton Mercury, 4 July 1807). Astronomy was yet another interest and he advertised 'a fine achromatic telescope' for sale in 1811 (op. cit., 21 September 1811).

An interest in geology is also recorded by Goff (1975, p.69) who notes that 'in about 1815 a Mr Comfield of Northampton forwarded pieces of the [Northampton Sand iron] ore to Mr David Mushet, the discoverer of similar deposits in Scotland some years before'. This 'rediscovery' predates the well-known one of 1851 (Beaver 1951, p.34) by many years. Richard's course of lectures on Natural Philosophy was announced in 1820 (Northampton Mercury, 22 January 1820), and this seems to have been a feature of the school's curriculum (op. cit., 24 July 1820). He published observations, written from Northampton on 3 August 1824, on the occultation of Jupiter (Comfield 1826). His second paper on astronomy (Comfield and Wallis 1826) was, however, written from Clapham near London on 9 November 1825 and he seems to have given up his school at Northampton then or soon afterwards (Northampton Mercury, 15 July 1826). Certainly when the death of one of his sons was announced in 1827 (op. cit., 18 August 1827) Richard is now noted as 'late of Northampton'.

He had probably already moved to Cheltenham by 1827. He was certainly there by 1833, with the foundation of the CLPI, and by 1834 is already named as its Curator when he lectured to the Institution (now with 150 members) on optics (Analyst 1 (5), 1834, p.376). He thereafter became a frequent lecturer on a wide range of topics to the burgeoning audiences in Cheltenham. In 1836 he is noted as lecturing on botany (Cheltenham Magazine, 1, 1836, pp.14-18), and is then named as a 'Professor of Astronomy' (op. cit., pp. 64, 93). He lectured to the CLPI on botany and astronomy in 1836 (op. cit., pp. 57, 88) and was still its Curator in 1837 (op. cit., 1837, p.371) but is listed as such in the Directories only up to 1840.

David Allen points out that the CLPI Curator would have joined the Botanical Society of London 'to obtain specimens for the Institution's herbarium from the Society's periodic distributions. For out-of-town members this was indeed the sole point in joining' (D. E. Allen in lit. 31 May 1986). Comfield is shown here in a lithograph (Fig.2) by George Rowe (1796-1864) produced in 1837 (Cheltenham Looker On, 6 May 1837, p.278). In 1838 he is recorded as both Curator and Assistant Secretary to the CLPI, (Cheltenham Annuaire for 1838, p.35). The Cheltenham Directories list him as residing at three different addresses in Cheltenham between 1837 and 1842. He died on 21 April 1842 at the 'advanced' age of 66 and was described as 'formerly Curator of the CLPI for many years, as well as one of its founders and respected for his high scientific attainments' (Cheltenham Looker On, 23 April 1842, p.266; Cheltenham Examiner, 27 April 1842).

From the Curator's recorded salary in 1839-1840 of £30 a year (7th Report CLPI, p.19, the first time it is recorded), it becomes clear that Comfield could only have been the part-time, semi-retired Curator and Assistant Secretary to the Institution. So he does not quite qualify to join the ranks of the newly emerging, fully professional curators, but he is a remarkable early scientist who has completely escaped the net of secondary sources.

The early years of the CLPI

David William Nash (1809-1876) was an active member of the CLPI in its early years. He was born in Bristol, trained at London University and by 1832 was an assistant surgeon in the Bengal Army. He was also elected an Associate of the Linnean Society by 1837. But sometime in the 1830s he abandoned medicine through ill-health and came to live in Cheltenham. Here he published on the local geology (Nash 1837a, b) and delivered 'the first course of lectures on geology ever given in Cheltenham', at the CLPI (Guise 1877). It was he too who performed the local Egyptian mummy unrolling in 1842 when the country's Literary and Philosophical Institutions were gripped with 'unrolling fever' (10th Report CLPI, pp.6, 10, 13; J. Buckman to the Secretary of the Shropshire and North Wales Natural History and Antiquarian Society, letter dated 7 October 1842 - Shrewsbury Public Library MSS 133). The mummy passed into the Museum at the General Hospital (see p.182). In November 1843 Nash entered the Middle Temple as a barrister and left Cheltenham, although he returned in 1863. He died in 1876 (Times, 21 July 1876).

Little information is available about the Institution in these early years, because only one of the first nine Annual printed Reports from 1833-1834 to 1840-1841 has survived: the 7th for 1839-1840, when J. W. Earle was Honorary Secretary (CLPI collection and archives in Cheltenham Public Library).

The 10th Report CLPI for 1842-1843 notes (p.7) that the Cheltenham-born practical and pharmaceutical chemist James Buckman (1814-1884) had now been elected Honorary Secretary. Buckman is the first figure of national significance in the field of geology to emerge from Cheltenham. He was Secretary and frequent lecturer to the CLPI from at least 1842 to 1845 (12th Report CLPI, p.6). Buckman greatly stimulated the study of local geology, forming his own fine museum and contributing a number of papers, first on local botany then geology (for some of which see Austin 1928 and Royal Society 1867, pp.705-706). While he was an officer of the Institution, his most important publications in the field of Cotswold geology were A geological chart of the Oolitic Strata of the Cotswold Hills and the Lias of the Vale of Gloucester (J. Buckman 1843a) and his complete revision, jointly with H. E. Strickland, of Murchison's An outline of the geology of the neighbourhood of Cheltenham (Strickland and J. Buckman 1844, reissued as J. Buckman and Strickland 1845). Murchison had been asked to revise his Outline in 1841, just as he was setting out again for Russia; so he first asked Hugh Strickland (1811-1853), of Craycombe House near Evesham and later of Tewkesbury Lodge near Tewkesbury, to undertake any revision 'as may best stir up the Cheltenhamians' (Jardine 1858, p.clxvii). In the event Buckman took by far the greater part in the revision (S. S. Buckman 1906). In the second edition of this book Murchison noted in his preface (Strickland and J. Buckman 1844, p.viii) how little geology had been cultivated in Cheltenham in 1834, and how the Literary and Philosophical 'Society' and some of its members had now 'materially changed the scene'.

EARLY GEOLOGICAL COLLECTORS IN THE CHELTENHAM AREA (up to 1850)

In the 1844 edition of Murchison's book (Strickland and J. Buckman 1844) and other early sources the following geological collectors are mentioned [an asterisk * indicates a reference in Cleevely 1983]. It must be stressed that this list is only of local collectors active in the first decade and a half of the Literary and Philosophical Institution's existence, and an appearance in the list does not imply that their material actually came to its Museum, unless so stated.

BENSON, Rev. R[alph] L[ewen] [c.1800-1849]. Former Rector of Easthope, Shropshire; died in Cheltenham, 23 August 1849 (see Gents Mag., NS 32, 1849, p.548; Cheltenham Examiner, 29 August 1849, p.3). In 1846 he presented 'specimens of Lias and Oolite Fossils' to the Cheltenham Institution' (14-15th Report CLPI, 1848, p.9, see under Gomonde, W. H.).

BINFIELD, Mr W[illiam R.]. First noted as a donor of Leckhampton Inferior Oolite fossils to the Birmingham Philosophical Institution in 1846 (BPI Report, 1846, p.26), this is the man recorded in the 1848 List of Members of the Palaeontographical Society as living at Rodney Terrace in Cheltenham where he was a teacher and maker of pianos (Rowe 1845, p.ix). His cabinet is referred to by J. Buckman (1850, p.418). He is also presumed to be the W. R. Binfield* whom Morris and Lycett acknowledge in their Palaeontographical Society Monograph (Molluscs from the Great Oolite chiefly from Minchinhampton, etc.; Morris and Lycett 1851-1855, Part 2, p.42) as having 'assiduously collected' its fossils. By 1851 he had moved to Westbourne Grove in London and in this and the next two years he made a series of donations, including Cotswold material, to the Museum of the Geological Society in London and lent material from Dumbleton and Alderton to John Morris (Morris 1853, p.324). The last donation to the Geological Society was given jointly with Henry Binfield, and was of Wealden fossils, in illustration of a paper they presented in 1853 (Binfield and Binfield 1854). The location of the main Binfield collection is not known, so the connection with Cheltenham may be significant in trying to trace it.

BONNER, Rev. George [c.1783-1840]. In an early lecture on comparative physiology given to the Institution in December 1835, Dr Thomas Wright was able to use a small but beautiful skeleton of the Ichthyosaurus which had been presented to the Institution by Bonner (Cheltenham Magazine, 2, 1837, p.45). Bonner graduated from Cambridge University (Venn 1940-1954, Vol.1, p.318) in 1821 and became incumbent of St James', Cheltenham, in 1830. He died in June 1840 (see Gents Mag. NS 14, 1840, p.438; Cheltenham Journal, 29 June 1840, p.2).

BRAVENDER, Mr [John] FGS, [1803-1878]. Cirencester land surveyor and professor of engineering and land surveying at the Royal Agricultural College, Cirencester, 1846-1848 (Bathurst and Kinch 1898, p.10). His collections are thought to have gone to the Agricultural College Museum whose fate has

THE
CHELTENHAM LOOKER-ON;

A Note Book of Fashionable Sayings and Doings.

THIRD SERIES, NO. CCXXX.

Original Series,
No. CCCCLXI. }

MAY 27, 1843.

{ Price 3d.
STAMPED.

EXTENSIVE SALE OF FOSSIL ORGANIC REMAINS.

MR. CHARLES WOOD

HAS THE HONOUR TO ANNOUNCE THAT HE WILL

Sell by Auction,

(Without Reserve, and Duty Free.)

At the CLARENCE GALLERY, Clarence Street, Cheltenham, on THURSDAY and FRIDAY, the 1st and 2d of JUNE next,

ALL that extensive, unique, and very interesting Collection of FOSSIL ORGANIC REMAINS, the property of Mr. JAMES DUDFIELD, of Tewkesbury. This beautiful Collection, which is the most interesting ever seen in this Neighbourhood, contains many fine Skeletons of the Ichthyosaurus and Plesiosaurus, besides a large number of Fossil Shells and other Organic Remains.

The Specimens, which are well worthy the investigation of the curious, will be on view, on and after Friday next till the time of Sale, from Eleven to Five o'clock each day, for which Tickets, (6d. each) with a descriptive Catalogue, containing Illustrations of some of the principal Fossils, by George Rowe, may be obtained at the Examiner Office, at Mr. Buckman's, Medical Hall, Pittville Street, or of the Auctioneer.

. The Collection will be lotted out for the convenience of purchasers, and as the whole must be cleared off, every lot will be peremptorily sold.

Sale to commence each day at Twelve to the minute.

PUBLISHED EVERY SATURDAY MORNING BY H. DAVIES, MONTPELLIER LIBRARY.

Fig. 3. Notice of the sale of James Dudfield's collection of 'Fossil Organic Remains' in 1843 (Cheltenham Public Library).

been outlined by Torrens (1982, pp.73-74). He was a local secretary for the Palaeontographical Society in 1868.

BRODIE*, Rev. P[eter] B[ellinger] [1815-1897]. Curate of Down Hatherley, west of Cheltenham, 1840-1853 (Venn 1940-1954, vol.1, p.389). Built up an enormous geological collection during his long life, which was much dispersed at a sale in 1895 (Cleevely 1983).

BUCKMAN*, James [1814-1884; see also text]. Honorary Secretary from at least 1842 and Lecturer to the Cheltenham Literary and Philosophical Institution until 1845. His donation of eighty specimens of Fossils and Minerals in 1842-1843 to the Institution is recorded (10th Report CLPI, p.13), and his son S. S. Buckman (in Crick 1902, p.343) confirms that many of his father's specimens were then still in the Cheltenham College Museum, having passed there from the Institution (see p.189). Some of his manuscripts relating to his secretariate at Cheltenham are in the library of the British Geological Survey at Keyworth (Archives 1/1183, 1842-1847).

CLOSE, Miss [no information]. Probably one of the eight children of the important progressive Cheltenham cleric Rev. Francis Close (1797-1882) (see Goding 1863, pp.145-151).

COLES*, H[enry] Esq [FGS, FRCS, c.1806-1866]. Surgeon of Cheltenham and dedicatee of Ammonites colesi J. Buckman, who is first listed alone in the Cheltenham Directories in 1839 (Annand 1971, p.35) and last in 1849. He

joined the Geological Society of London in December 1844 (ex inf. J. C. Thackray) but had been active as a collector in Cheltenham since at least September 1839 when he presented specimens to the Museum of the Bristol Institution (Bristol Records Office 32079/43, letters of September - October 1839). By 1852 he had left Cheltenham and moved to Leamington Spa, where he was living when his paper on the supposed skin of Ichthyosaurus (actually cephalopod hooklets in the stomach, Moore 1857), based on specimens he had earlier collected between Tewkesbury and Upton-on-Severn, was published (Coles 1853). Some of his collection may then have been sold, in April 1852, to the London dealer James Tennant (GGC 2, 1977, p.41). By 1855 he had moved to Hammersmith, having been appointed Professor of Comparative Anatomy at the London Hospital Medical College (Kinns 1889, p.485) and was a signatory to the effectively anti-Darwinian manifesto of 1865 (Brock and Macleod 1976). He died on 3 December 1866 (Cheltenham Examiner, 12 December 1866, p.8). His final collection of fossils was sold at auction in London on 12 March 1867 (Chalmers-Hunt 1976, p.105).

DUDFIELD, Mr [James] of Tewkesbury [c.1795-1858]. He was an early collector of the Liassic ichthyosaurs and other fossils of the Tewkesbury area (Richardson 1846, p.119; The Geologist, 1, 1842, p.160). His collection, till then 'the most interesting ever seen in the Cheltenham' neighbourhood and consisting 'of many fine skeletons of the Ichthyosaurus and Plesiosaurus besides a large number of fossil shells and other organic

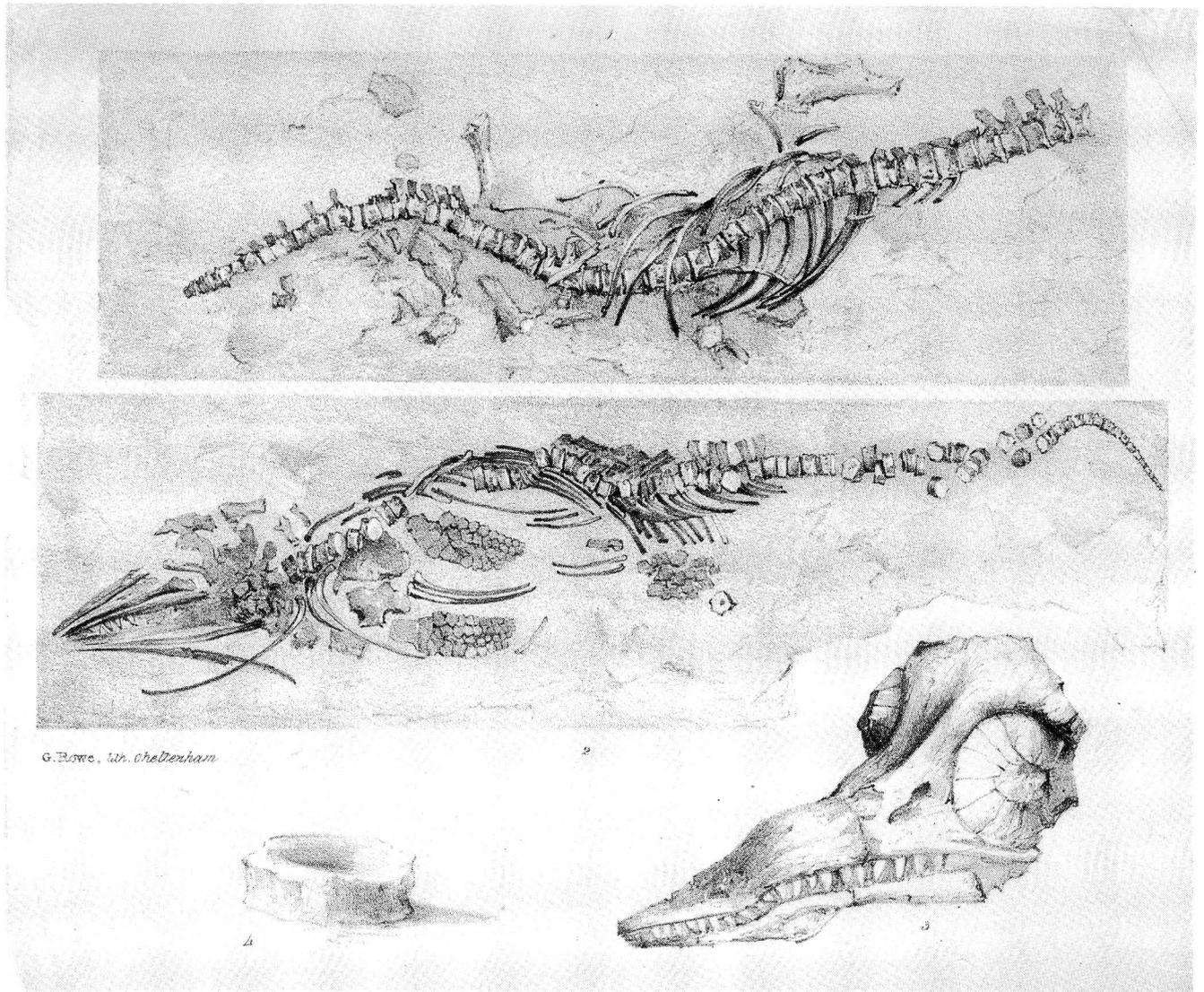


Fig. 4. A lithograph (260 x 200 mm.) of two Fossil Saurians with a vertebra and skull by 'George Rowe, lith. Cheltenham' and torn from a printed pamphlet (probably the missing sale catalogue of 1843 noted in Fig. 3) (HST collection).

remains', was suddenly auctioned by Charles Wood in Cheltenham on 1-2 June 1843 (Cheltenham Looker On, 27 May 1843, cover; reproduced here as Fig.3.). A report of the sale (op. cit., 3 June 1843, pp.344-345) is given below (see also Tewkesbury Yearly Register for 1840-1849 [published 1850], pp.124-125 (for 1843):

'A SALE OF ORGANIC REMAINS, comprising the splendid collection of Mr Dudfield, of Tewkesbury, took place on Thursday, at the Clarence Gallery, and, generally speaking, the various specimens obtained good prices, the competition for some of the rarer fossils being very spirited, several Fellows of the Geological Society being present, besides most of our local geologists. The gem of the collection, a fine head of the Ichthyosaurus, together with a most interesting skeleton of this curious animal, was purchased by Mr Buckman, and is, we understand, destined to enrich the museum of Captain Guise, of Rendcombe Park [Sir William Vernon Guise Bart., 1816-1887, FLS FGS (Anon. 1888)]. Another beautiful specimen of the

Ichthyosaurus fell to the lot of a gentleman of the name of Rose. The large skeleton of the Plesiosaurus was knocked down to Mr Buckman. We are glad to find that several of the most valuable specimens are likely to become the property of our own Literary and Philosophical Institution, a fine slab of Saurian Bones, and a number of the rarest fossils characteristic of the Lias Formation, having been purchased for the Society's museum, by direction of the Council, and we believe, also, Dr Thorp, the President of the Institution, became the purchaser of some highly curious remains of the Hippopotamus, Elephants' Tusks, Nautili, &c. with the express intention of presenting them to the Society.'

What has since become of these treasures is not known. But the sale catalogue contained illustrations of some of the principal fossils by the artist George Rowe, although no copy has ever been traced. The Rowe lithograph reproduced here (Fig.4, from an original once in the Buckman family) may be one from the missing sale catalogue. If so, it may help

identify the present whereabouts of the four figured specimens. Many of them are likely to have been those still recorded in the Cheltenham College Museum in 1937 (see p.194). The 'fine head of the Ichthyosaurus with a skeleton' purchased by Buckman in 1843 was recorded as preserved in Buckman's own Museum by Rowe (1845, p.62) and as coming from Brockeredge Common, near Tewkesbury. This seems certain to be the particular specimen discovered and described from this locality in the Tewkesbury Yearly Register for 1841 (vol.2, p.42) as found in July 1841 and six feet ten inches in length. The description closely matches the specimen figured here as item two on Fig.4. This adds to the likelihood that this plate is from the missing sale catalogue.

Dudfield was the son of William Dudfield (c.1753-1832) of Bredon's Hardwick, Worcestershire (op. cit. for 1830-1839 [published 1840], 1, p.83) and was born c. 1795 and baptised at Twining in 1798. He married Harriot Kingsbury (c.1796-1844) at Tewkesbury on 2 November 1820 and became a druggist in the High Street, Tewkesbury, Gloucestershire. His enthusiastic fossil collecting from the area, especially of Liassic saurians, was first noted in May 1840 (Lloyd 1840). His museum collection included Quaternary fossils (Jardine 1858, vol.2, p.141) and archaeological objects (op. cit. for 1840-1849 [published 1850], 2, p.30), and four particularly fine saurians - three Ichthyosaurus and one Plesiosaurus found in 1841 and 1842 are described which passed into his collection (op. cit. for 1841, p.42; for 1842, p.81). There is sufficient detail to help their identification if traced in surviving collections.

Dudfield was also an exhibitor at the annual meeting of the Tewkesbury Literary, Scientific and Mechanics Institution in 1842 (op. cit. for 1842, pp.86-87). There is no doubt that he was also a commercial dealer supplying saurian remains to Adam Sedgwick (1785-1873) in Cambridge in 1842 (Sedgwick MSS, Cambridge University Library, Add 7652 ID 169). A letter to Sedgwick of 31 May 1843 (IE 49) explains Dudfield's delay in sending further ichthyosaur material because of 'the unfortunate pecuniary circumstances in which I am suddenly involved (sic) [which] renders it necessary that I should not only part with my fossils but also of everything else I have'. His bankruptcy was soon announced (Staffordshire Advertiser, 1 April 1843; Cheltenham and Free Press, 1 April 1843), thus explaining the suddenness of his auction sale in June.

Sedgwick seems to have arranged to make some purchases at the auction or by private treaty beforehand, for a third letter from Dudfield dated 16 June 1843 (IE 49a) announces that Sedgwick's 'beautiful saurian specimen was forwarded today' to Cambridge, thanks Sedgwick most sincerely for his liberality and states that Dudfield now had 'a prospect of commencing business again under favourable circumstances'. The Commissioner in Bankruptcy in Bristol most unusually congratulated Dudfield 'on the straightforward

and honourable way in which he had encountered his difficulties' (Cheltenham Examiner, 14 June 1843).

Dudfield now turned to farming instead and seems to have made no return to palaeontology. He did pay a dividend to his creditors in 1843 (Staffordshire Advertiser, 23 September 1843) and died on 15 October 1858 at Trowborow Farm, Twynning, Gloucestershire (Tewkesbury Register, 23 October 1858). His will (Gloucestershire Record Office) makes no mention of any further geological collection.

Thomas Wright (1860, pp.392-394) provided further notes on the fine saurian remains auctioned in 1843, which may help in their identification. A specimen of vertebrae with a paddle of an Ichthyosaurus, which still survived (labelled 'Lower Lias near Tewkesbury') in the Biology Department of Cheltenham College in 1985, seems likely to be a single known survivor of this sad story. More local research is needed.

FOWLER*, C[harles] Esq FRCS [1797-1858].

One of the most successful medical men in Cheltenham's heyday, surgeon at Cheltenham General Hospital 1825-1856 (Cardew 1920; Glover [as Contem Ignotus] 1884, pp.201-202), and Curator of its Museum (Hamilton 1841, p.22) which certainly later contained geological material. His personal collection is first heard of in 1840-1841, in connection with Quaternary vertebrates from the new Birmingham and Gloucester railway excavations (Jardine 1858, vol.2, p.141). G. B. Sowerby (1812-1884) executed a volume of drawings for him, Palaeontology of the vicinity of Cheltenham (c.1844-1858), which survives in the library of the British Museum (Natural History). In 1851 the Cotteswold Field Club visited his fossil collection, 'most curious in the beauty and perfection of the specimens' (Baker 1853, p.101). He died on 4 May 1858 at Weston-super-Mare (Cheltenham Looker On, 8 May 1858, pp.449-450; Cheltenham Examiner, 12 May 1858, pp.4, 8) but nothing was known of the subsequent history of his collection (Cleevely 1983, p.121). The MSS Minutes of the Institution's Council for 17 November 1856 (in Cheltenham Public Library) now show that Fowler, having just left Cheltenham, then intended 'to present his collection of geological specimens to the Institution' and that the Council gratefully accepted this offer of his 'very valuable cabinet' of fossils. Dr Thomas Wright was at the same time authorised to name and arrange it and to make such exchanges of fossils from this and the other collections of the Institution to make up a complete set of local fossils. In this way Wright could have built up his own fine collection which already included one of the two types of Cidaris fowleri n. sp. which Wright had named after Fowler (Wright 1853, pp.139-141) using specimens collected by Fowler. James Buckman likewise named Ammonites fowleri after him (Strickland and J. Buckman 1844).

LYCETT*, John LRCPE [1804-1882]. Physician at Minchinhampton c.1840-1860, and co-author or author of a number of important monographs on the fossils of the Cotswolds, and a treatise

on the local geology (Lycett 1857). In 1860 he moved to Scarborough in Yorkshire and the wide dispersal of his magnificent collection of fossils from this area commenced (Glos. N. & Q. 2, 1884, pp.71- 72; Cleevely 1983, p.190; Cox and Arkell 1950).

MURLEY, Mr C. [Rev. Charles Hemsted (1823-1873)]. Only son of a local Cheltenham surgeon Stephen Hemsted Murley (c.1787-1875) (Cheltenham Examiner, 3 March 1875, p.8), who became a Member of the Royal College of Surgeons in 1811 and was a proprietor of the Cheltenham Institution. Stephen Murley was in medical practice in Cheltenham from 1826-1839 with Henry Coles (q.v.) (Cardew 1920, pp.13, 51) and it was in their private Dispensary that James Buckman (q.v.) was first apprenticed as a chemist and pharmacist in Cheltenham (Cheltenham Looker On, 29 November 1884, p.763) and 'acquired a taste for scientific pursuits'.

This interest was shared by Charles Hemsted Murley who joined the Botanical Society of London as a schoolboy in 1839 (Allen 1987). He or his father was dedicatee of Ammonites murleyi J. Buckman (in Moxon 1841). Charles was born in 1823 (Glos. N. & Q. 4, p.114), graduated BA in 1845 and MA in 1849 at Oxford University (Foster 1887-1888, vol.3, p.998) and entered the Church. He died on 28 September 1873 (Cheltenham Examiner, 1 October 1873, p.8). His geological collection had passed to Oxford University Museum by 1843 (Phillips 1865-1909, p.66, pl.13). It is listed in the Museum's first manuscript donations book (OUM archives) as 'Cheltenham Fossils Mr Murley 1843 - unpacked H. E. S[trickland] 1852'.

STRICKLAND*, H[ugh] E[dwin] [1811-1853]. Co-author with James Buckman (1844, 1845) of the revision of Murchison's Geology of ... Cheltenham (see p.179; Jardine 1858). His main geological collection is in the Sedgwick Museum, University of Cambridge.

WITTS*, Rev E[dward] F[rancis] [1813-1886]. Keen collector from the Eyford Quarries near Stow-on-the-Wold, and also a botanist. His father's diaries, in part published (Verey 1978), are a wealth of information on the Victorian scene in Gloucestershire. Much of Edward's geological collection was presented to Gloucester City Museum in 1963 (Savage 1963), and the Department of Geology, University of Bristol, appears to hold the remainder.

Three further less well known contributors to these Cheltenham Institution collections up to 1844 are recorded:

BODLEY, Thomas (of Cheltenham) [fl. 1828 - fl. 1858]. The dedicatee of Ammonites bodleyi Buckman, 1844, but not named as a collector by Strickland and J. Buckman (1844). He is first heard of as a subscriber to the second edition of Young and Bird's book on the Geology of Yorkshire (1828). He was elected a Fellow of the Geological Society on 28 March 1832 when he was still 'of Brighton' (Proc. geol. Soc. Lond. 1, 1832, p.425). He donated two trays of 'very interesting fossils

from the Chalk Formation' (12th Report CLPI, 1845, p.14) to the Institution in 1844 or 1845. He is also named as a local collector in 1856 by Wright (1857-1878, p.viii) and exhibited fossils at the British Association meeting in Cheltenham that same year (see below). A letter in CLPI archives dated 29 July 1857 from the Lake Hotel, Grasmere, records that he wished to continue as a subscriber to the Institution despite his 'very advanced age'. He resigned from the Geological Society in 1858 (ex. inf. J. C. Thackray).

SCOTT, Miss (of Cheltenham). In an earlier list of fossils found near Cheltenham, James Buckman (1843b) mentions the cabinet of a Miss Scott, of whom nothing further is known.

BELL, Capt. Henry [1803-1887]. On 3 December 1842 the Rev. Francis Edward Witts (1783-1854; father of E. F. Witts mentioned above) recorded a visit to the Institution. After observing that it did not yet seem 'to be very well supported' and had a museum 'but slenderly provided with objects of curiosity or interest', he noted the presence of 'a good many geological and fossil specimens especially a series from the coal field of Northumberland presented by Capt. Bell' (Witts 1842). This donation by Capt. Henry Bell (1803-1887) of Woolsington, Northumberland (then of Chalfont Lodge, Leckhampton, Gloucestershire), shows that the collection was never just of local Jurassic material.

THE DEVELOPMENT OF THE CLPI'S GEOLOGICAL COLLECTIONS

As the great majority of the CLPI's Annual Reports printed before 1842 cannot be traced, little is known of the CLPI collections for this period. Thomas Wright (see below) was clearly a major early stimulus, giving CLPI lectures on comparative physiology in 1835 and on Fossil Zoology in 1838 (Cheltenham Magazine, 2, pp.379-383; Bell 1981). Even by 1842 the CLPI does not seem to have paid particular attention to geology (see above sub H. Bell). An Art Gallery Exhibition was a special feature of CLPI activity in 1841 (Hamilton 1841, p.34; Blake 1982, pp.13, 59).

Things changed in 1842 when Buckman could write to Sedgwick that 'we have recently had a course of lectures on geology by Mr Richardson of the British Museum and he so agreeably popularised the subject that we can now muster a large geological party at Cheltenham' (Sedgwick MSS ID 171, late 1842). This refers to the first course given in Cheltenham by George F. Richardson (1796-1848) in September 1842 (Torrens and Cooper 1986, pp.260-261; a copy of the previously untraced Syllabus for his course survives in the G. B. Greenough archive, University College, London). The encouragement of Cheltenham geology continued in 1844 with the first publication of the major revision of Murchison's book (Strickland and J. Buckman 1844). With the survival of all the printed Annual Reports of the Institution from 1845 onwards we are able to say a good deal more of the later history of the Museum.

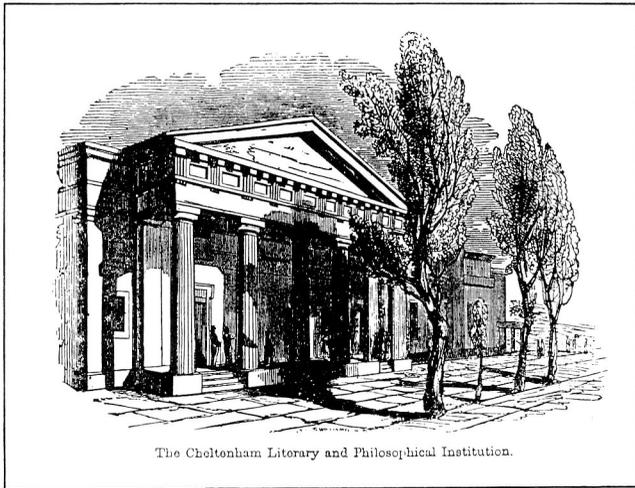


Fig. 5. An engraving of the Cheltenham Institution published in 1845. The 'polite society' shown outside soon allowed the building to be demolished (Cheltenham Public Library).

The first President of the Literary and Philosophical Institution was Dr Henry Charles Boisragon (c.1770-1852) (Bell 1981) gave the Inaugural Address published in 1833 (Boisragon 1833) but is not known to have taken any particular interest in geology. He was followed by Dr Disney L. Thorp who purchased geological specimens for the Institution's Museum at the Dudfield auction (see above). The next President, elected in March 1845, was William Henry Gomonde (c.1803-1863) (Cheltenham Looker on, 26 September 1863, p.626). He graduated BA at Oxford University in 1825. He is best known as an antiquary (Austin 1928, p.5) but again was a significant geological collector and the dedicatee of the fossil gastropod Turbo gomondei n. sp. (Morris and Lycett 1851-1855, pp.66-67). The authors of this species note that they were allowed to use his collection of Oolite fossils. This collection has not previously been traced (Cox and Arkell 1950, p.xxii) but Lias and Inferior Oolite material and Silurian specimens from Malvern were all donated to, and in part arranged by Gomonde for, the Cheltenham Institution (14th Report CLPI, pp.8-9) in 1846. A letter in the CLPI archives from Gomonde to the Secretary dated 23 April 1846 records this presentation 'of an almost complete series of the fossils of the Inferior Oolite from the immediate neighbourhood of Cheltenham ... and I also beg to state that the Rev. R. L. Benson of 12 Pitteville Parade [q. v.] has through me sent some fossils from the same stratum as also others from the upper and lower Lias'. Brodie (1850, p.245) refers to this choice Inferior Oolite material which Gomonde had obtained from Leckhampton. Gomonde was elected a Fellow of the Geological Society of London in 1852 (ex. inf. J. C. Thackray) but seems to have later returned to his archaeological work; his library and antiquarian collections (comprising only archaeological material) were auctioned in Cheltenham soon after his death (Cheltenham Looker On, 21 November 1863, p.747; 28 November 1863, p.769).

It was in 1845, during Gomonde's Presidency, that the CLPI sent a deputation to the British Association for the Advancement of Science meeting at Cambridge. The deputation included Thomas Bodley and went with the intention of getting the BAAS to meet in Cheltenham in 1846 (CLPI archives, letter of 24 June 1845). But the overture was not finally successful as the Institution later felt unable to give the BAAS 'an adequate reception'. It met instead at Southampton (Report of BAAS, 16, 1846, p.xviii).

The nominal bearers of the title of Curator are amongst the least known dramatis personae of the Institution. From the annual salaries paid in 1844 - Curator £40 and Assistant Curator £23-1-0 - they were still clearly little more than janitors or clerks. The curator in 1841-1844 was James Blakie (CLPI Accounts and Vouchers for 1841-1845, Chelt. Publ. Lib.). By 1845-1846 the curator's salary was £52 per annum (13th Report CLPI, p.31).

The Institution was noticed thus in February 1845, after its first decade (Rowe 1845, p.18) in the building illustrated in Fig.5:

'The LITERARY AND PHILOSOPHICAL INSTITUTION (opened 1833) now demands attention, but the crowded situation of the building prevents the beautiful proportions of the portico from being fully appreciated; and we may remark, en passant, that erections of this kind usually lose very much of their beauty when thus set up and confined amongst modern houses and shops. This portico is a model of one of the ends of the justly-celebrated Temple of Theseus at Athens. Its peculiar appropriateness to the present use will be admitted, when we consider the Attic King in the relation of one of the founders of Ancient Greek civilization, and the originator of the popular form of government. In after years, his admiring countrymen gathered his bones from their exile-grave, to bury them with national honors in the magnificent temple-tomb which bears his name. The Institution was formed for "the Cultivation of Literature and Science, and the Preservation of such works of Art as tend to illustrate the progress of Discovery and Civilization." To effect these desirable objects, Public Lectures and Readings are delivered during the Session, which extends from September to May, works of Art and Science, subjects of Natural History, Antiquities etc. are deposited; a Library established, and a Reading-room for the use of the subscribers. The building was erected under the superintendence of R. W. Jearrad, Esq., the talented architect of the Queen's Hotel, Christ Church, and other buildings which adorn the town. It contains a spacious and elegant lecture room, museums, reading room, laboratory, offices etc., with a residence for the curator. The Institution consists of Proprietors, Ordinary Members, and Life and Honorary Members. The affairs are managed by a Council of ten Proprietors, five Ordinary Members, the President, two Vice-Presidents, Secretary, and Treasurer. Each department of the Museums is under the charge of a Curator; and that devoted to Geology is particularly rich in specimens. A permanent Library of Reference for general use has been established in connexion with this Institution.'

The known contents of the Museum to this date certainly bear out the early attention paid to geological material by the membership.

In 1846 Henry Clifton Sorby (1826-1908), the pioneer of the microscopic study of rocks, visited Cheltenham and what must have been the Museum of the Institution (Bishop 1984, pp.76-77). Such visitors will have further publicised the contents and value of the Museum.

Another development in 1846 was of more ominous significance for the future of the Cheltenham Institution: the formation of the first Field Club in the Cotswolds. This arose from that social innovation of the previous decade, 1836-1846, the coming of the railways (Clinker 1964), which had major effects on both the Institution and the study of geology in the area. The new railways yielded an enormous number of new sections to supplement those provided by building operations in the richly fossiliferous local Jurassic rocks of Cheltenham, as well as the means by which the geologists could reach these sections to study them. Excavation of the Great Western Railway branch line from Gloucester to Cheltenham yielded Liassic fossils which the resident engineer, Richard Boxall Grantham FGS (1805-1891) presented, with other specimens, to the Geological Society of London between 1839 and 1842 (see 'Lists of Donations' in publications of the Geological Society).

The new social mobility provided by the railways had other results, for the Cotteswold Naturalists' Field Club, newly founded in 1846, was soon to take over and expand the original role of the CLPI in the local encouragement of natural science (Torrens 1982), notably in the organisation of field trips. From 1846 onwards the days of the CLPI were clearly numbered by such competition, as happened elsewhere for much the same reasons (Allen 1976). The CNFC, founded to study the 'Cotteswold district and its neighbourhood', is one of the first British local natural history and archaeological societies which superseded these earlier 'Institutions'. Its history has been related by Lucy (1888) and Fletcher (1946). Its founder members included Thomas Wright and Sir Thomas Tancred (after whom the Jurassic bivalve *Tancredia* is named). Several important donors to collections in Cheltenham, notably Linsdall Richardson to CHLGM, used the Club's Proceedings as a vehicle for their researches. Other members at various times included P. B. Brodie, J. Lycett, R. Etheridge and both James and Sydney Buckman. The Club specifically decided not to form a museum of its own and so any donations made to it (such as the Cornford Collection; see p.201) were promptly passed on to local museums.

At about the same time as the CNFC was founded, problems of finance started to emerge at the CLPI. Already in 1845 'the funds arising from Annual Subscriptions and other sources barely sufficed for the current expenditure of the Institution' (12th Report CLPI, p.11) and this was to become a recurrent theme. By early 1846 the Institution's dynamic geologist/botanist James Buckman had left to become Secretary and Curator to the Birmingham Philosophical Institution (13th Report CLPI, pp.4, 12),

starting his new career as a professional scientist (Torrens 1988a). A potential replacement was Robert Etheridge (1819-1903) who became a new CLPI Subscriber in 1845 (op. cit., p.16) and joined its Council in 1846 (14th Report CLPI, p.5). He was then a partner in a drapery business with his brother in the Promenade. His meteoric rise as a geologist soon afterwards elsewhere was clearly in great measure inspired by the Cheltenham Institution, and Messrs Buckman and Wright's own examples (Cheltenham Looker On, 26 December 1903, p.1289). But he was soon appointed Curator of the Bristol Institution, in January 1851 (Crane 1985, p.18), before becoming in 1856 one of the assistant naturalists at the Museum of Practical Geology in London (Flett 1937, p.69) - having joined, like Buckman, the new generation of professional scientists. Etheridge continued his connection with Cheltenham by regular return visits to the town as a lecturer and as a guide to the local geology in the field. It was this knowledge of Cotswold geology which had so impressed Murchison and was instrumental in getting Etheridge his post in London (Geikie 1875, vol.2, p.259).

With two such significant defections from the ranks of Cheltenham geology, its core had certainly now been significantly disrupted. The first local Secretary (June 1847) of the newly formed Palaeontographical Society was the Cheltenham surgeon Walter Cary. By June 1851 he was replaced by Thomas Wright (Palaeontographical Society archives).

The next CLPI President, elected in 1847, was the most famous geologist to have been connected with Cheltenham, Dr Thomas Wright (1809-1884), who was a surgeon at the local hospital (Glos. N. & Q. 3, 1887, p.662; Bell 1981). Wright proudly proclaimed his presidency on the title page of his first geological publication in book form, the third edition of G. F. Richardson's (1796-1848) textbook which Wright enlarged and revised under the title of An introduction to Geology (Richardson 1851). Wright's first publications, befitting a medical man, were in the field of comparative anatomy. His contributions to stratigraphy and palaeontology began in 1850 (Midlands Naturalist, 7, 1884, pp.341-344), and his contributions to Cotswold geology were mostly published in the Proceedings of the Cotteswold Naturalists' Field Club and the Monographs of the Palaeontographical Society. Prior to his Presidency, Wright had long been a lecturer to the CLPI, and - as we have seen - was also engaged in the curation of the Institution's collection. But more and more after 1850 the focus of his activities moved to the national, rather than local, level and the CLPI became more peripheral to him. However, Wright did act as the local Cheltenham Secretary for the Palaeontographical Society from 1851-1870. The marvellous personal fossil collection he made was dispersed by the dealer F. H. Butler (Cleevely 1983, p.319). It was offered for sale soon after his death through his old friend Robert Etheridge ([Etheridge 1884]), when it was noted to contain about 16,000 specimens but with no detailed catalogue. It contained all the specimens figured in Wright's Monographs. It was snapped up and then dispersed by Butler.

1851

September 29th

Institution to Thomas Jenkins

Bought by Mr Wright

a list of Fossils to the amount of $\frac{10}{20} \frac{10}{10} \frac{0}{10}$

Settle'd

Thomas Jenkins

Fig. 6. A receipt dated September 1851 for fossils bought by Thomas Wright for the Institution from the dealer Thomas Jenkins of Leckhampton (Cheltenham Public Library).

From about 1850 the main method of adding to the Museum's collection of fossils seems to have been by purchase (e.g. 17th - 20th Reports CLPI). The receipt for one of these survives (Fig.6) to demonstrate the involvement of both Thomas Wright as purchaser and one Thomas Jenkins (c.1793-1868) as vendor. Jenkins was paid to 'clean' fossils in the CLPI collection as early as April 1846 (letter of W. H. Gomonde, 23 April 1846, CLPI Archives) and earlier, on 22 October 1842, Jenkins was paid 10s 3d from the CLPI Museum account for 'arranging fossils' (CLPI Accounts 1841-1845).

THE JENKINS FAMILY: COMMERCIAL DEALERS IN CHELTENHAM

Thomas Jenkins is the Cheltenham dealer who continued the tradition of selling geological specimens started in Cheltenham by John Mawe and Anthony Tatlow. Mawe and Tatlow's original establishment had been sold up in 1843, while Jenkins was based at Leckhampton. He is first heard of at Leckhampton in 1842 when Buckman (1842, p.60) mentions Mr Jenkins' 'Antediluvian and Fossil Remains' repository, and its 'most honest and intelligent' proprietor as having interests in botany, geology and antiquities. The first is explained by Jenkins being essentially a market gardener who also dealt commercially in fossils and antiquities. In 1851, the year of the above sale to the Cheltenham Institution, the Cotteswold Naturalists' Field Club also visited this Leckhampton dealer (Baker 1853, p.101).

In 1856 both Jenkins and his son William (c.1828-1882) contributed to the temporary Geological Museum set up in the CLPI for the benefit of those attending the British Association for the Advancement of Science meeting held in Cheltenham in August 1856 (Anon. 1856, p.14; see p.187). At the same time they inserted the advertisement transcribed below (Cheltenham Looker On, 9 April 1856, p.764) in the hope of sales to the 1,109 delegates (Anon. 1856, p.8).

'Thomas Jenkins
BEGS to inform the Scientific Public, that he has on Sale at his
ANTEDILUVIAN REPOSITORY
LECKHAMPTON ROAD, CHELTENHAM
A large and interesting Collection of FOSSIL REMAINS
His Specimens of SAURIANS, and of the rarer Shells
from the Lias and Oolite of the Vicinity, are well
worthy of the attention of Collectors.
T. J. also deals in Old Coins, Tokens, Roman
Pottery,
and Archaeological Curiosities in general.'
(Cheltenham Looker On, 9 August 1856, p. 764)

One result of this advertisement may have been the sale of an Ichthyosaurus sp. to the Museum of Practical Geology in 1856 (Rolfe et al. 1988, p.147). P. B. Brodie (1858, p.88) noted that 'many of the characteristic fossils of the Cotswolds may be purchased at a moderate rate of Jenkins, a nurseryman on the right hand side of the road leading to Leckhampton' from Cheltenham. Between 1857 and 1860 Jenkins made further frequent sales to the Museum of Practical Geology in London (Cleevely 1983, p.164), probably through the intercession of their recently arrived assistant Robert Etheridge, late of Cheltenham.

Jenkins' portrait was painted in 1856 by the sixteen year old Briton Riviere (1840-1920) in a characteristic pose with Upper Lias ammonite (Fig.7; Cheltenham Art Gallery coll. P 1919, 209 A) (see Herdman 1931, p.24). He died in 1868 (buried 7 October 1868, aged 75; Leckhampton Burial Register, Glos. Record Office IN 1117) and his son William in 1882 (buried 18 February 1882, aged 54). Fossil Street in Leckhampton is thought to derive its name from their activities. William continued to supply fossils until at least 1877 when he supplied the presumed original of Ammonites cheltiensis Murchison, 1834, to the British Museum (Natural History) (BMNH C74955a - see Spath 1938, pp.46-47, pl.1, fig.3; Phillips 1987, p.58). In 1947 a grandson of William (A. H. W. Jenkins of Surbiton) offered a number of his Cheltenham fossils, still wrapped in 1870's newspapers, to Cheltenham Town Museum (letter dated 8 July 1947 in CHLGM archives) but it is not known if the offer was ever taken up.

To illustrate that purchasing scientifically accurate fossils from dealers can be a hazardous activity, Jenkins must be implicated in the problems of the brachiopod subspecies Waldheimia cardium var. leckhamptonensis Walker in Davidson, 1878 (vol.4, p.185). This brachiopod was claimed to originate from the Leckhampton Inferior Oolite when in fact it had come from the Great Oolite of the Bath area (S. S. Buckman 1899, p.9). Jenkins' part in the story is documented in a letter from Charles Upton (died 1927) to J. W. Tutcher (1858-1951) of 6 March 1922 (copy in BRSMG Geology File TUT 61/15). Upton was curator at Gloucester Museum which then had some of these ssp. leckhamptonensis brachiopods from the collection of John Jones (c.1818-1881) of Gloucester. He believed that these and other specimens formerly in the Cheltenham Institution and Museum of Practical Geology were all 'introduced' to the Leckhampton

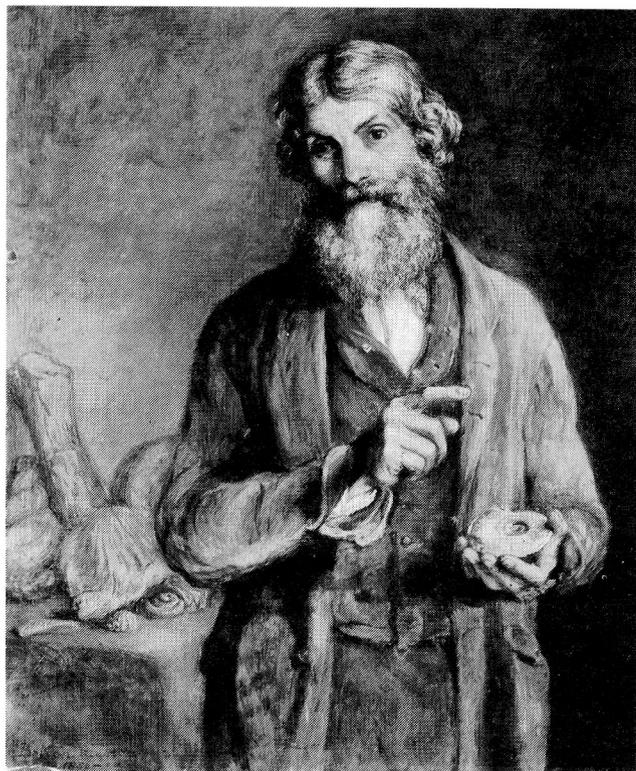


Fig. 7. The portrait of 63 year old Thomas Jenkins, holding an Upper Lias ammonite, painted in 1856 by 16 year old Briton Reviere (Cheltenham Art Gallery and Museum).

fauna by Jenkins. Upton reported that Walker paid Jenkins particularly high prices for 'rare brachiopods'!

THE BRITISH ASSOCIATION VISIT OF 1856 AND ITS AFTERMATH

As far back as 1845 Cheltenham and its Institution had set up a Committee to encourage the British Association for the Advancement of Science to consider Cheltenham as a possible venue for its annual meeting (12th Report CLPI, p.11). But by the time their approach was successful the Cheltenham Institution was in serious financial trouble and the British Association's visit in August 1856 was hosted by an Institution already on the verge of extinction. The 23rd Report CLPI for 1855-1856 reported that the Institution's revenue was simply insufficient to meet expenditure and hoped that the British Association's visit would give a 'healthy impulse to the cultivation of the Institution's studies'. The visit did indeed prove a healthy stimulus but in the climate prevailing in Cheltenham at that time, only a wholly temporary one.

The printed Reports of the Local Committees for the visit (Anon. 1856) show that they had been both diligent and successful in raising finance and exhibits for the many visitors. In particular, to emphasise the many features of special interest that the Cheltenham area held for geologists, a Sub-committee made up of Thomas Wright (Director), the Rev. Robert Hepworth (c.1800-1891), Robert Etheridge, and James Scougall, was successful in forming and arranging a temporary

'Geological Museum - superior in its palaeontological value to any ever offered to the contemplation of the Association whether as it regarded the variety and beauty of the specimens or the classification and the scientific arrangement of the parts' (Anon. 1856, p.5). The exhibitors included the following contributors of local material which remained on exhibition in the Institution until 15 September 1856 (Minutes of CLPI):

- J[ames] AGG-GARDNER, Esq [c.1805-1858; Lord of the Manor of Cheltenham since 1843; Hart 1965] 'Fossil Elephant's Teeth, and Septaria - from Cheltenham district.'
- Thomas BODLEY Esq, FGS (see p.183) - 'Carboniferous Plants, Oxford Clay Ammonites, Lias Reptilia, Fishes and Shells.'
- Rev. P. B. BRODIE MA FGS (see p.180) - 'Lias Insects and Corals.'
- Mr Thomas JENKINS (see p.186) - 'Reptilia from the Lias, Shells from the Oolite, and Elephant's Teeth from the Gravel - from Cheltenham district.'
- Mr William JENKINS (see p.186) - 'Bone of a supposed Mammalian Quadruped, from the Inferior Oolite, and Shells from the Inferior Oolite.'
- John JONES, Esq (see p.186) - 'Silurian Shells and Corals; Oolitic Shells and Corals.'
- 5th Earl of DUCIE, [C. H. B. MORETON (1827-1921) of Tortworth Court; see Cleevely 1983, p.208] - 'Silurian Shells and Corals, Carboniferous Shells and Corals - from Tortworth district. Oolite Fish, Echinoderms, and Corals - from Windrush.'
- Charles PIERSON Esq (see p.189) - 'A beautiful Jaw of the Palaeotherium medium Cuvier from the Isle of Wight. Reptilia and Fishes from the Lias, Shells from the Inferior Oolite, a fine and nearly perfect Skeleton of Ichthyosaurus, and a series of Shells from the Oolites of Harcourt, and Vaches Noires, Calvados [France].'
- Miss [Ann Taylor] SLATTER (see Cleevely 1983, p.267) - 'A collection of Corals from the Great Oolite.'
- Rev F. W. WITTS [recte E. F.] MA FGS (see p.183) - 'A fine collection of Fish teeth, Shells, Insects, Wings and Echinoderms - from the Stonesfield slate of Eyeford, Gloucestershire.'
- Thomas WRIGHT MD FRSE (see p.185) - 'Shells from the Great Oolite; Shells and Corals from the Inferior Oolite; a fine unique collection of the Echinodermata of the English Oolite Rocks, containing all the Type Specimens figured in his Monograph on British Oolite Echinodermata; Shells from the Gloucestershire Lias, and a fine series of Ammonites from that formation; Shells, Trilobites, and Corals, from the Silurian Rocks of the May Hill district; and a fine series of the Cephalopoda, from the Oolites of Wurttemberg. The above series formed nearly one-half of the whole collection.'
- A collection of fossils was purchased from those exhibited 'under the advice of Dr Wright' for the permanent collections of local geology at the Cheltenham Institution (Anon. 1856, p.18) - the 'formation of which had redounded so much to the honour and scientific reputation of the town.' In addition other non-Cotswold material was exhibited by the following:

M. ALEX Esq.
The Bristol Institution and its then curator
Robert ETHERIDGE, late of Cheltenham (see
p.185)
William CUNNINGTON Esq., FGS, of Devizes
Dr Ralph Barnes GRINDROD FGS of Malvern
Charles MOORE FGS of Bath.

Yet another Cheltenham collector of this period,
not listed above, is:

TARTT, William Macdowall (c.1787-1881) JP of
Cheltenham. Wright (1856, p.viii)
acknowledged the use of his collection in his
work on Oolitic Echinodermata. Tartt was a
poet and essayist of Gatacre, near Liverpool,
from 1820 to 1832 (National Union Catalogue;
Boyle 1967, pp.284-285). By 1841 he was
living at Lyme Regis and was then elected
Mayor (Hutchins 1863, vol.2, p.49) - where he
surely acquired an interest in geology? By
1848 he had moved to Cheltenham and joined the
CLPI (14-15th Report CLPI, p.29). He
published volumes of Memoirs (1868) and
Essays (1876) and died in Cheltenham in 1881
(Times, 28 December 1881, p.1). His will,
proved in 1882 (Gloucester Record Office),
makes no reference to his fossil collection
(whose fate remains unknown) but books and
manuscripts were left to his sister-in-law.
The Cheltenham College Donations book records
his gifts of coins and antiquities in
1873-1874.

After the British Association's visit, the
minutes of the Institution show that Messrs
Thomas Wright, T. W. Norwood and Charles Pierson
were particularly active in running the Museum
during these last few years. The surviving
receipts (CLPI vouchers for 1858, Cheltenham
Public Library) include one in Thomas Wright's
characteristic hand for 7 shillings for 'a slab
with Cidaris and spines from the Coral Rag',
showing that the Museum was being added to until
at least this date. It is also clear how
closely Wright was involved with the Institution
(Bell 1981, p.34) and its geological collection
(in a 'symbiotic' association with his own
highly significant geological collection, by
exchange).

But less than a month after the British
Association had departed, one visitor who had
come with the Association (quite probably
Henry Coles, late of both Cheltenham and
Leamington) wrote a letter to the Cheltenham
Examiner (10 September 1856, p.3) on the
'Extinction of the Philosophical Institution'.
This bemoaned the final failure to support
scientific institutions of the 'two most
fashionable towns in England - the King and
Queen of watering places, Leamington and
Cheltenham'. That at Leamington had closed and
that at Cheltenham was 'about to be closed'.
The writer blamed the local gentry for failing
to support the Institution and concluded that
'the disgrace accompanying the extinction of the
Cheltenham Philosophical Institution must fall
not on the managers but on the wealthy
inhabitants of the town'.

This visitor proved very prescient, if only a
little premature. Thanks to the survival of the
manuscript minutes of the CLPI (in Cheltenham
Public Library) for 1854-1860 (only) this final

extinction can be accurately charted. The 24th
Report CLPI noted that the meeting of the
British Association at Cheltenham had indeed
been 'attended with brilliant success yet it did
not produce to this Institution those results
which were anticipated'. Receipts for the four
years 1853-1854 to 1856-1857 had progressed
downwards from £251, £257, £236 to only £190, so
that the continued working of the Institution
became an impossibility, and the Council
expressed much regret that within a year of the
British Association's visit 'an Institution
which has endeavoured to diffuse a taste for
Literature and Science should be allowed to
languish and die for want of support.'

In the next Report CLPI (25th) for 1857-1858 the
income was still only £190 but the current debt
was nearly £200. This was reduced by donations
to £65 but there still remained a debt of £1,250
to redeem the mortgage on the Institution's
building! In the 26th Report CLPI for 1858-1859
it was ominously noted that 'rumours respecting
the future of the Institution have damaged it'.
The 27th Report CLPI for 1859-1860 records the
replacement as Hon. Secretary of Thomas Williams
(elected in 1846) by Henry Davies (1804-1890), a
local printer and publisher. Only 102
subscribers are listed in this final Report CLPI
which states that the Council was compelled to
admit the possibility that their successors may
have to dissolve the society 'which for seven
and twenty years has struggled to obtain for
Cheltenham a recognition in the world of
Literature and Science'. In the manuscript
continuation minutes Henry Davies' wish to
retire as Hon. Secretary on 12 March 1860 is
noted. He was replaced by the
Rev. Thomas Wilkinson Norwood (1829-1908) at the
Annual General Meeting on the following day.
But Norwood could do no better and at a special
general meeting held on 3 September 1860 (the
last recorded) the Council recommended that the
property of the Institution should be handed
over to the Proprietors for its disposal.

Norwood was appointed curate of St Paul's,
Cheltenham, in 1855 (Venn 1940-1954, vol.4,
p.570) and admitted as a member of the CLPI in
1856, and a Fellow of the Geological Society in
1859. He clearly had an impossible task in
taking on the Honorary Secretaryship at this
time. He left Cheltenham for Chelsea in 1867
but he was much more successful as a geological
collector (see Woodward 1894, p.517, and Gill
1903, p.114 where his fine collection, from 1878
at Wrenbury in Cheshire, is particularly
noted). He died in 1908 (Anon. 1908) when, as
shown below, a major part of his collection then
returned to Cheltenham College.

The demise of the Institution in 1860-1861 is
recorded by Goding (1863, pp.551-552), Hart
(1965) and Bell (1981). The CLPI archives shed
much light on this sad story. When the
Proprietors resolved to sell the Institution,
the Cheltenham Improvement Commissioners even
offered to purchase the building for £2,150 if
the balance of £350 on the £2,500 the building
had realised at auction could be raised. The
idea was to use the building for a Public
Library, etc. But as a CLPI subscriber,
James Robert Campbell (c.1802-1861),
mineralogist and conchologist, had written 'they
are an abominably stingy set here [Cheltenham],

that is a fact' (Matheson 1964, p.223) and the money could not be found! The Bill for the removal of the Museum and Library from the Institution in November 1861 survives. The magnificent building was then demolished and replaced by shops which, with a let of upwards of £150 a year, showed a 300% appreciation on capital value for the speculators involved! History here reveals some truly Victorian values! The CLPI records include a file of 'papers relating to the dissolution of the Institute 1861' but are mainly involved with legalities. The collections, and library, of which a printed catalogue of 67 pages dated 1849 exists, were then apparently put into inadequate storage. The books were presented to the Cheltenham Library in 1873 by the trustees of the Institution (MSS Catalogue in CLPI archives), while the Museum collections were later transferred to the Cheltenham College Museum which opened in 1870 (see below).

THE CHELTENHAM WORKING NATURALISTS' ASSOCIATION AND THE CHELTENHAM NATURALISTS' ASSOCIATION

The Cheltenham Working Naturalists' Association was founded on 7 November 1861 (Riddlesdell and Austin 1919), after the collapse of the CLPI. The Secretary was the botanist William Lowndes Notcutt (1819-1868) and botanical work seems to have been the Association's main priority (Riddlesdell *et al.* 1948, p.cxxviii). However, the original members (Austin 1928, p.225) did include one geological worker, the Rev. T. W. Norwood, who, as we have seen, built up a fine collection of Gloucestershire fossils while living in Cheltenham from 1855 to 1867 (Anon. 1908).

In 1867 a new Cheltenham Naturalists' Association was founded by amalgamation with this earlier and by now neglected Working Naturalists' Association (Eliot 1871, p.201). One of the declared aims of the new Association was to 'promote, spread, and foster a knowledge of, and interest in geology'. This Association deposited its collections, including geological material, in the Cheltenham College Museum in 1870 (see below).

THE CHELTENHAM COLLEGE MUSEUM

Cheltenham College, a Church of England public school (still flourishing today) was founded in 1841. In 1868 the Rev. Thomas William Jex-Blake (1832-1915) was appointed Principal. He was a firm believer in the educational value of the study of nature, and his single (but important) innovation was to urge the creation of a school museum. In the words of the school's historian (Morgan 1968, pp.57-58, 75):

'In 1870 one of the original rackets courts was converted into a museum. Barry had cherished the idea of a museum and Southwood and several members of the Council were strong in support. They thought "it would tend to interest the pupils in the study of Science and Natural History, while at the same time it would provide an attractive and useful recreation during their playhours." Jex-Blake agreed with this from his Ruskinian point of view and lent his support. The Council got from the Trustees of the Cheltenham Literary and Philosophical

Institution a large collection of fossils; from the Cheltenham Naturalists' Society [actually the Association, see above] "a fine collection of fossils, minerals and other objects" on condition that the museum was open to the public one day a week; and from Mr Charles Pearson [sic] "his large and valuable collection of Geological Specimens." The Council was able to report on 6 December that the museum "contains many valuable specimens representing Geology, Mineralogy, Conchology, in a very complete form, also Botany, Numismatics, Mathematical and Chemical Apparatus, Natural History, Technical Science, and objects of antiquity and curiosity."

Charles Pierson (c.1806-1891; wrongly called Pearson by Morgan 1968) had been one of the mainstays of the Cheltenham Institution in its last years and was one of the organisers and exhibitors at the temporary geological museum exhibited at Cheltenham for the British Association in 1856 (see p.187). His main field of interest was geology and it is known that his collection of fossils (which included French material; Wright 1856, p.314) was available for public inspection at his home, 3 Blenheim Parade, Cheltenham (Pierson 1858). At the same period, Pierson was also one of the Directors and most devoted friends of Cheltenham College, from 1856 to 1862. After the school's reorganisation he became a triennial member of the College Council, from 1862 to 1883 (Hunter 1911, pp.14, 17; Cheltenham Examiner, 4 March 1891, pp.4, 8; Cheltenham Looker On, 23 June 1883).

Being closely involved with both the now defunct Institution and the College, Pierson seems to have been the main instigator of the transfer of the old collections of the Cheltenham Institution to the College in 1870. Exactly what was transferred is not certain but it seems to have comprised the entire contents, including important archaeological material (C. I. Gardiner *in litt.* to James Eyre, 15 August 1930 and 6 October 1930, Liverpool Museum archives; Report, 14, p.52).

The opening of the College Museum on 31 January 1871 was announced in the following terms:

'Since the collapse of the Literary and Philosophical Institution the curiosities and specimens which that body had collected have lain in an unused horse stable, awaiting the advent of someone who would again utilise them for the public. The handing-over to the College of the old Philosophical treasures have led them to throw open the Museum to the Public one day a week ... 4,000 specimens have been arranged the majority labelled. The contribution of the Philosophical Institution was clothed with the dust and dirt of ten years neglect and each specimen had to be hand-washed and re-labelled before it was fit for exhibition. All this was done by C. Pierson and Mr T[homas] Bloxam the [Hon.] curator' (Cheltenham Examiner, 1 February 1871, p.4).

The first Honorary College Museum Curator, from 1870 until his untimely death in July 1872, was the geologist, chemist and science master at the College from 1862, Dr Thomas Bloxam (1836-1872) (Argyll 1873).

The College was concerned to extend the collections. A printed Memorandum dated 24 June 1870 survives; it seeks donations of specimens and apparatus across the natural sciences and technology 'to be sent to Mr Bloxam the curator' (Cheltenham College Archives). The 8th Annual Report of the Council of Cheltenham College (21 June 1870) records that they had already received other contributions to the Museum from Lady Charlotte Schreiber, Mrs Savory, Professor [James] Buckman, Dr [John] Abercrombie, Dr [Edward Thomas] Wilson [see pp.191, 202], Charles Pierson Esq., John Walker Esq., George Humphreys Esq., A. Fry Esq. of London, R[ichard] Beamish Esq. [FRS], and T[homas] Bloxam Esq.

The 9th Council Report (21 June 1871) announces the completion of the Museum at a cost of £550, the receipt of the CLPI collection, and also that 'the Cheltenham Naturalists' Society had also presented a fine collection of Fossils, Minerals etc'. It acknowledges Pierson's initiation of the whole project and notes that he had also given his own extensive Geological Collection to the College Museum. The 10th Council Report (25 June 1872) records Pierson's 'continued superintendence' of the Museum and adds the opinion of one of the College's London-based examiners that 'no other Public School in the Kingdom possessed such a valuable Museum'.

The death of the first Curator, T. Bloxam, in 1872 was at first a major obstacle to the development of the College Museum. Probably for this reason, when the Geologists' Association visited Cheltenham in 1874 it visited the collections of Rev. Frederick Smithe (1822-1901) of Churchdown (Wethered 1901). He made fine collections of fossils, minerals and recent shells (Anon. 1874). These collections were sold by S. S. Buckman for the benefit of the family after Smithe's death (Cleevely 1983, pp.269-270). The relevant archive is preserved in the library of the British Geological Survey at Keyworth (Archives 1/1188).

In 1875 William Bishop Strugnell (fl.1875 -fl.1898) attempted to publish a book entitled 'Rambles round Cheltenham in search of Fossils; with an alphabetically arranged Glossary of the Oolite and Liassic genera. S. S. Printer'. As an indication, perhaps, of the contemporary low interest in such a publication it was never published and only proof sheets of pp.1-8, 22-44, the Glossary, p.47 Order of Strata, and pp.48-50 Ramble 1 to Leckhampton now survive (in the Palaeontology Library, British Museum (Natural History)).

On 14 February 1877 the Cheltenham Examiner published (p.8) a notice of the College Museum which highlighted the ignorance of local inhabitants about the Museum, and again acknowledged Pierson's contribution. It also surveyed the non-geological contents.

On Pierson's resignation from the College Council in 1883 it was resolved to call the College Museum the 'Pierson Museum' in acknowledgement of the long and valuable services he had rendered. He was also made Honorary Curator (21st Council Report, 29 June 1883) and is named as such by Greenwood (1888;

see also GCG 3, 1982, p.330) who noted an average of fifty visitors a week to the Museum, and special local features in the collections of fossils and 'skulls of the stone period'!

In 1888 Pierson moved from Cheltenham to live at Norwood, London, with his son. This move inspired a further donation of a collection of fossils, but presented in 1888 not to the College but to the Town of Cheltenham, which was put into storage pending a proper purpose-built Museum for Cheltenham (which eventually came about; see below). [That this still did not exhaust the resources of the Piersons' geological collecting becomes clear from correspondence in 1961 between Pierson's grandson and the Town Clerk and Curator of Cheltenham Museum (preserved in Cheltenham Museum archives). The grandson sought to locate the then whereabouts of the Pierson collections and then to donate his own collection of Chalk fossils to them. But neither the headmaster of the College nor the Curator of Cheltenham Museum could give him any information about the fate of the Pierson collections, and the Chalk fossils in question went to a school in Rottingdean!]

Murray (1904, vol.1, p.297) recorded that the College Museum was still called the Pierson Museum in 1904. Pierson died on 26 February 1891 (Times, 28 February 1891, p.1) and the Honorary Curatorship lapsed till 1895. Ward (1893) discussed the College Museum and its acquisition of the Institution's collections:

'It is strange that a town of such dimensions, refinement, learning, and wealth, as Cheltenham, should of all places, be minus a rate-supported, or at all events, a public museum. Such, however, is the case. Still, this town of stately streets and foliage is not wholly shut off from the advantages of such an institution. The general public are, and have a right to be, admitted gratuitously to the Museum of the well-known College one afternoon each week. This is the full extent of the privilege; the Museum is the property of the College, and primarily exists for that seat of learning. How the public received this privilege is soon told. In 1869 the idea of a museum for the scholars was practically taken up by the council, and thirteen months later it was an accomplished fact. But this movement within was supplemented - perhaps set a-going - by an equally potent one without. There was an old Philosophical Institution in the town, which contained a fairly good collection of fossils, minerals and other things; these its trustees offered to the above council. We will not inquire into the "why and wherefore" of this act of generosity (the institution has long been defunct - perhaps its end was foreseen), but before parting, these gentlemen stipulated that the new museum should be opened, as above, one afternoon a week to the public. They were not the only benefactors. One of the members of the council, Mr Charles Pierson, presented his own private geological collection, and from other quarters rolled in minor contributions. Since then, this small museum does not appear to have made many acquisitions; so it may be surmised that its present-day condition is not markedly different from that when it was opened, nearly twenty-three years ago'.

A published source which now throws some light on the history of the College Museum is the series of Reports of the Cheltenham College Natural History Society of which a total of fifty-four were issued over the period 1871 and 1952 (see Appendix 2). Inspired by the establishment of the College Museum, this Society had been founded in March 1870. From its first Report it is clear that the Society was very much run for the pupils by the pupils with help from the staff, and was at first quite distinct from the Museum. The Museum is not separately mentioned in the first Report, other than in an exhortation to members to collect for the Museum. Geological activity by the Society in 1870 was noted simply as 'little attempted, less done,' and a prize of £1-10-0 was offered for the best collection of local fossils to stimulate more activity. The outcome of this competition is unknown as the Society promptly lapsed into an oblivion only to be revived on 15 February 1889 (Report, 2, p.5)!

The revived Society of 1889 boasted a separate Geological Section whose schoolboy secretary was H. J. Burkill (1871-1956). The only schoolboy collector of fossils to exhibit before the Society was one E. A. Wilson, also active in the entomological and ornithological sections, who won the prize for the best collection of local fossils. In 1891 Wilson was noted as one of 'the most energetic members' (Report, 4, p.5). Edward Adrian Wilson (1872-1912), who died with Scott in the Antarctic, is rightly revered as one of Cheltenham's brightest sons and his many activities as a schoolboy collector illuminate his similar dedication to geological collecting on the return journey from the Pole (Wilson 1972, pp.240-241). How Huntford in his controversial book (1979, pp.520, 556-557) can call this last collection one made with 'grotesque misjudgement' and 'a pathetic little gesture', or observe that 'the specimens meant almost nothing', is difficult to understand. The material included the first Glossopteris (G. indica var. Wilsoni Seward) from Antarctica (Moore 1981), which were then unique (contra Huntford 1980, p.87; see also Young 1980) and of vital importance in the debate on Continental Drift which was soon to erupt.

Wilson's activity as a schoolboy naturalist must have been inspired by both his father Dr Edward Thomas Wilson FRCP (c.1833-1918) (see Times, 26 April 1918 and Cheltenham Looker On, 27 April 1918, p.11) who had been an early donor to the College Museum (see p.190) and probably also his paternal grandfather, another Edward (born 1808 - alive 1863). The latter should be remembered in the world of museums for the part he played as agent to his American brother Dr Thomas Bellerby Wilson (1807-1865) (Watson 1909, pp.2-3) in amassing up the wonderful natural history material now being uncovered in the collections of the Academy of Natural Sciences in Philadelphia (for one major example in the field of palaeontology, see Spamer et al. 1989).

The reports from 1889-1894 (Reports, 2-6) say little of the College Museum and we thus gain few insights into its development, although they constantly refer to the use of fossils and specimens from the Museum to illustrate lectures. In 1895 Charles Irving Gardiner

(1868-1940) was appointed senior science master at the College (Anon. 1940), and straightaway became president of the Society's Geological Section (Report, 7, p.6) and one of the Society's Secretaries as well as Honorary Curator. As a result the quality of work undertaken by the section noticeably improved, new donations of fossils to the School Museum are recorded (Report, 7, pp.25-27, 33), and much-needed attention was given to the Museum. In 1896 it was noted (Report, 8, p.7) that the Old College Chapel was about to be used as a Library and Museum, thereby making more room in the present Museum, which was terribly crowded. As part of the major reorganisation of the Museum in 1896 the first paid Curator in the history of the College Museum was appointed, Mr James Charles White (c.1863-1930) (Report, 37, p.3), with Gardiner as Honorary Curator.

As part of this general re-arrangement, in 1898 the care of the 'very large' collection of Jurassic fossils was temporarily put into the hands of Sydney Savory Buckman (1860-1929) (Report, 10, p.5) who then lived at Charlton Kings. He was already an authority on Jurassic stratigraphy and palaeontology, having been inspired by his father James Buckman. He reported that the Museum (S. S. Buckman 1899) contained 'a valuable series of fossils both for teaching and worthy of the attention of visiting geologists'. Buckman also reorganised these collections on a stratigraphic basis and did his best to relabel specimens, using brackets in a very modern and professional manner to indicate information which he had provided to supplement the original, although he had to report that 'the specimens in the majority of cases lacked any labels'. Buckman also reported on special features of the collection and was responsible for recognising one of the Type treasures, the figured syntype of Nautilus subtruncatus (Appendix 1). The collection included a particularly good selection of the characteristic fossils of the Inferior and Great Oolite in the neighbourhood of Cheltenham. Buckman also noted some of the deficiencies in the collection and in the following years he made a number of donations to help fill some of these gaps (Report, 11, pp.5, 18, 39). He was paid £10 for his work on the collection (Report, 10, p.59).

The previous year, S. S. Buckman (1898) had echoed Ward's amazement of five years before that Cheltenham still lacked a public or rate-supported museum. Writing of some new excavations near Cheltenham which had yielded some interesting specimens, he lamented that 'how sadly Cheltenham lacks a museum where such interesting relics might find a suitable home ... In the town which boasts Eruditio as its motto, and which is the centre of one of the most interesting districts of England, the want of such a museum is clearly extra-ordinary. All that can be said, however, is perhaps, better no museum at all than one suffering from the neglect which may too frequently be seen'.

In the next year, 1899, there was at last established a Cheltenham Art Gallery and Museum (see below). But the lack of any proper public museum building in Cheltenham between 1860 and 1907 meant that the College Museum acted as a substitute repository for local treasures during

this period. [A similar situation arose with another fine School Museum, at Sherborne in Dorset, from 1875 to 1885 (Torrens 1978a)].

However, we must not forget the role in Gloucestershire of the Museum of the Royal Agricultural College, Cirencester (founded 1846), in accepting some of the geological collections made by the Cotteswold Naturalists' Field Club; and still less must we forget its unfortunate fate (Torrens 1982).

Geological donations to the College Museum 1870-1912

Thanks to the survival of the original College Museum donations book (in the College Archives), supplemented by the printed Reports, it is possible to list here the major geological donations up to the First World War in chronological order. No registration numbers were given to them, but it is notable that major geological donations continued to be made to the College Museum even after Cheltenham Town Museum was opened in 1907.

- 6 June 1870. 12 Ichthyosauri and Plesiosori [sic] in frames; Lower Lias - hanging on wall; C. Pierson.
- 12 June 1870. Ichthyosaurus in frame. Head of Ichthyosaurus hanging on wall; Dr [John] Abercrombie.
- 14 June 1870. 26 Bones of Plesiosaurus - hanging on wall; C. Pierson.
- 23 June 1870. All the specimens and objects of Natural History from the late Cheltenham Literary and Philosophical Institution.
- 22 August 1870. Paddle of Ichthyosaur [see below] - hanging on wall. Crocodile; Kimmeridge Clay; C. Pierson.
- 15 November 1870. Case with 10 drawers containing various fossils; 17 boxes of minerals and fossils; presented by Cheltenham Working Naturalists Association.
- 14 June 1878. Vertebrae of Ichthyosauri - hanging on wall; fossil fish in slab; presented by the Cheltenham Hospital with osteological and anatomical material.
- 6 June 1883. Glass Case of fossil corals, 150 specimens for the Town Museum; deposited C. Pierson Esq.
- 10 October 1897 and 18 December 1897. Two collections of fossils given by Rev. Edward Thomas Griffiths (1856-1913) (Old Cheltonian, and vicar of Cam, Glos. 1898-1913; see also Report, 8, p.16). These were rich in trilobites, especially from Malvern and Dudley, and of a particularly high quality (Report, 10, p.36) and were specially labelled as 'Griffiths collection'.
1898. Box of fossils from the eminent historian W. E. H. Lecky (1838-1903) OM (Reports, 10, p.18), perhaps collected while he was a pupil at the College, and a very good collection of fossils from the Derbyshire Carboniferous Limestone, the Norfolk Forest Bed, and other rocks (Report, 10, pp.5, 36) presented by Rev. Edward E. Montford (c.1830-1918) (Venn 1940-1954, vol.4, p.445), some of whose other collections went to Norwich Castle Museum [now Norfolk Museums Service] (Times, 27 November 1918, p.11).
1899. Mrs Falkener, who is otherwise unknown, gave a large collection of chiefly Jurassic and Cretaceous fossils and also some minerals

which were all separately curated as the 'Falkener collection', on printed labels attached to the specimens (Report, 11, pp.5, 17, 39).

1900. A geological donation of more historic than scientific value was made by a General Cox, who gave a cabinet of Shells and Minerals (Report, 12, pp.18, 43) originally made by Lady Charlotte Murchison, 'many of the specimens being probably collected by Sir Roderick Murchison himself'.

1906. A collection of fossils made by the Rev. Addison Crofton (1846-1904) (Pine 1956, p.557) was given by his daughter. It was reported as containing very well preserved specimens, some collected by Crofton when at the College (Report, 18, pp.12, 40). The ammonites in this collection were sent to S. S. Buckman for naming (Report, 19, p.3). Crofton is listed by Gill (1903, p.107) and Cleavelly (1983).

August 1908. Two cabinets of fossils and shells were bequeathed by Rev. T. W. Norwood who had died in January 1908 and had been the last Hon. Secretary of the Cheltenham Institution (see above). This important collection was not only 'very numerous but in a very good state of preservation, several of them being of great value'. It was particularly strong in Inferior Oolite brachiopods, echinoderms and ammonites (Report, 20, pp.11, 47).

1909. Dr E. T. Wilson, father of Dr E. A. Wilson (see above), presented fossils and minerals which may have been collected by his son.

1912. Dr E. T. Wilson also presented 'specimens of Kenite - a rock from Mount Erebus' which had certainly been collected by his son (Report, 21, p.11; and 25, p.10).

College Museum developments 1914-1940

During the First World War Reports were not issued, but an Old Cheltonian who entered the College in 1915 and became a distinguished geologist after graduation from Bristol University, Dr F. B. A. Welch (1903-1987), later recalled (in litt. to HST, 2 December 1984) 'two tall cabinets in the Museum with a jumble of largely unlabelled specimens. Most were local Jurassic fossils from the Ragstone of Leckhampton and Pea Grit of Crickley. Also various Silurian materials collected by the science master C. I. Gardiner'. This suggests that the collections had become somewhat neglected in war-time. But donations continued, and in 1916 'three more cabinets of fossils collected by the late Charles Pierson Esq.' (see above) were donated by his widow (Report, 27, p.11). [This was the specific donation sought by his grandson in 1961 with no success (see above)!]

The Museum remained at its old racquets court site of 1870 with the addition of the other racquets court shown as a Yard in the map given by Hunter (1890, opp. p.2) for museum expansion in 1902 (Skirving 1928, p.xii-xviii; Report, 13, p.6) to double its size. Views of the Museum published in 1911 (Hunter 1911, between pages 2-3) give a fine idea of its scale (Figs. 8 and 9). There is evidence that in 1897, when the former School Chapel was converted for use as the School Library, some space at one end was also used as a museum area for material other

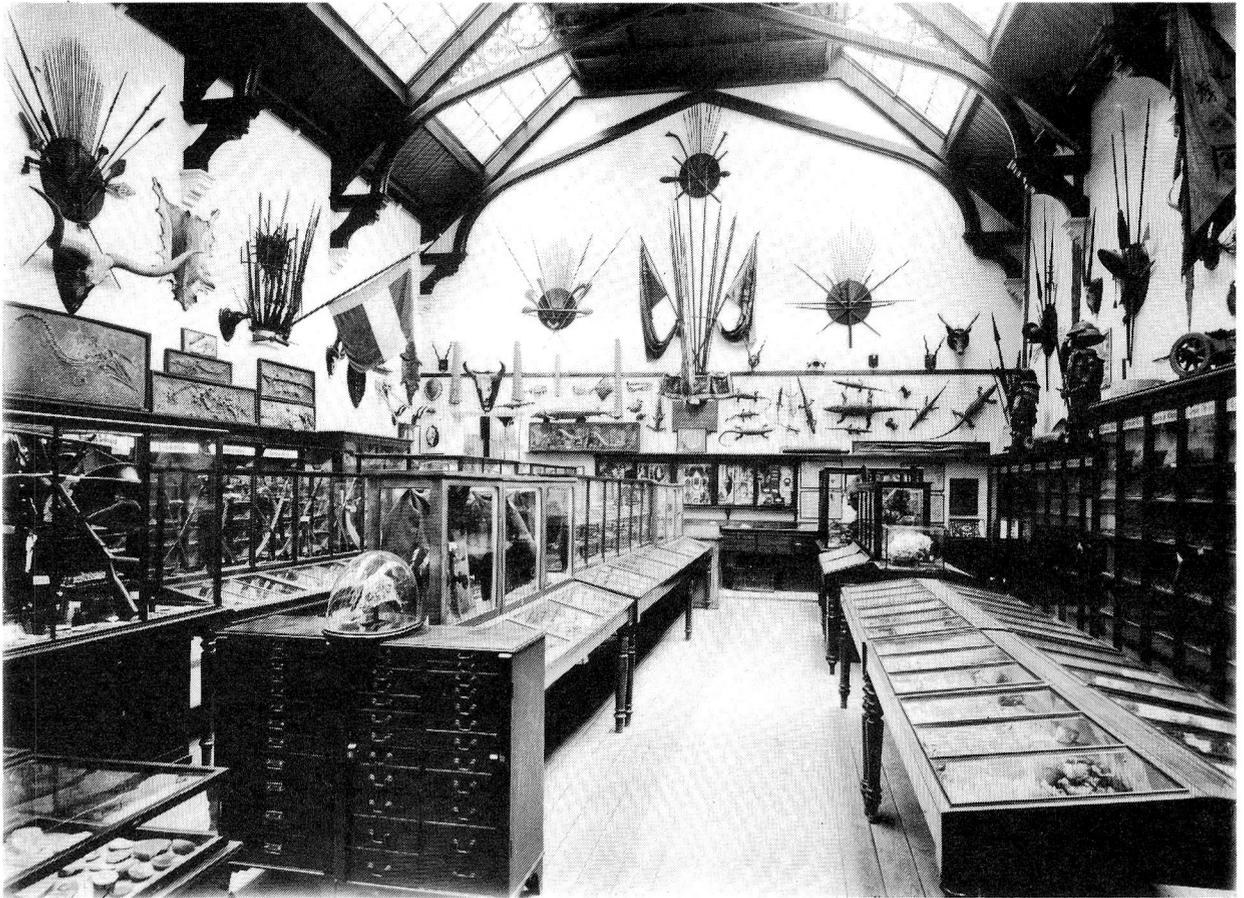


Fig. 8. The interior of the College Museum at its original site in about 1910. Note the six wall mounted Saurians on the left hand wall and the fossil fish in the centre of the far end wall. Photograph by G. Martyn and Sons, Cheltenham (Cheltenham College archives).

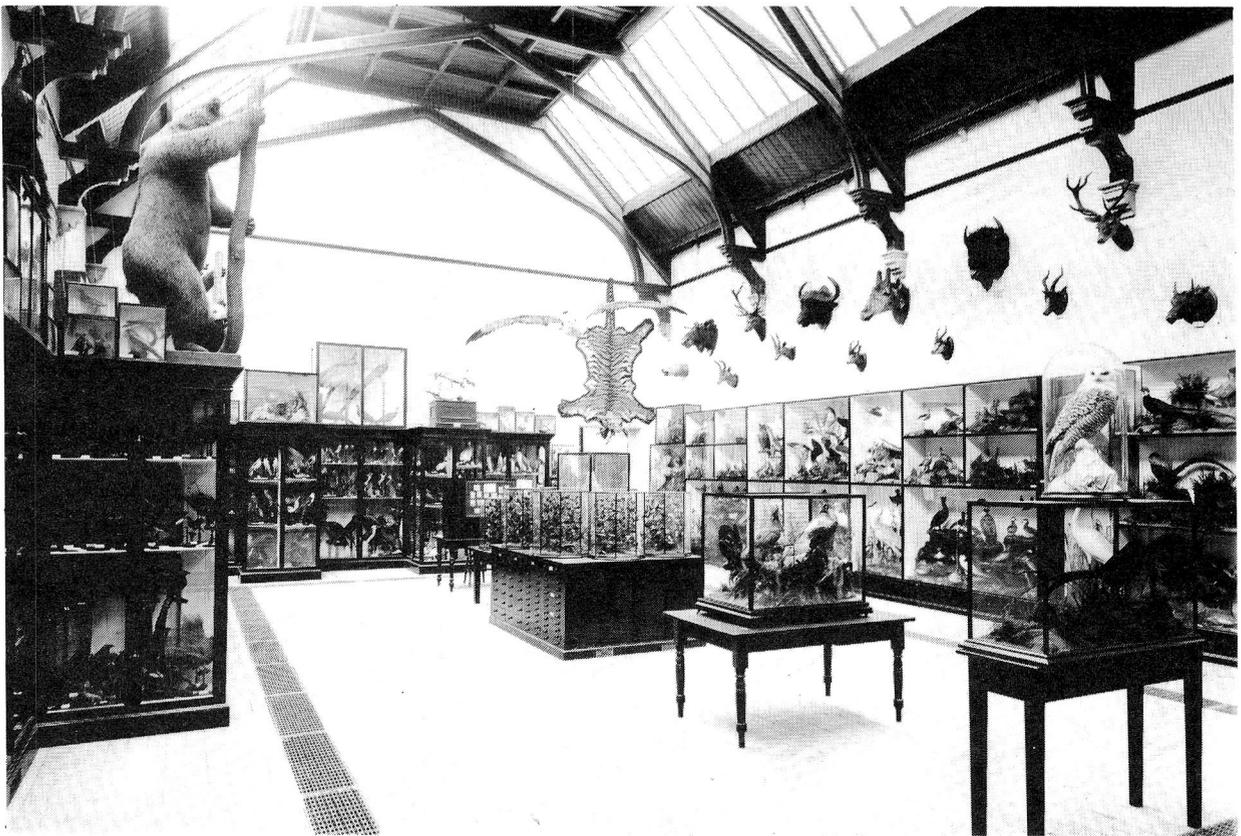


Fig. 9. The other end of the College Museum taken at the same time as Fig. 8., showing some of the zoological and ornithological collections (Cheltenham College archives).

than geological and natural history material. The 8th Report (p.7) noted that it would 'probably be possible to keep the old, so terribly crowded, Museum for a Natural History Museum alone'. Public access to the Museum one afternoon (Tuesday) a week continued, as confirmed by a letter from the Principal dated 18 February 1905 to the Librarian and Curator of Cheltenham Museum and Public Library (where the letter is preserved).

The Natural History and other collections were all transferred from their old home into the Big Modern in 1922-1923, when the old Museum rooms were needed for science rooms and form rooms (Report, 30, p.3; Skirving 1928, p.xix; Pigg 1953, p.xiv). The new site is shown on the map published by Skirving (1928, opp. p.1). The move probably involved a reduction in space overall, so the new 'Museum' was soon suffering from lack of room and many gifts were having to be refused. Some archaeological material that had been found c.1875 at the old Chedworth Roman Villa was returned in 1925 to the Museum being set up on the villa site (Report, 32, p.3). This would have slightly eased problems of space.

In July 1928 Gardiner, who had been Secretary of the CCNHS, Honorary Curator, and President of its Geological Section for thirty-three years, retired from the School (Reports, 35, p.3; 46, p.5). He was a keen geologist and author of two textbooks, An introduction to geology (1914) and Geology (1923), as well as a number of articles. He then became Curator of the Cowle Museum at Stroud (now Stroud District Museum) from 1929 to 1940 (Anon. 1940; Venn 1940-1954, vol.3, p.9; Gloucestershire Echo, 13 December 1940, p.3; Reynolds 1941), and transformed it into an excellent provincial museum. Gardiner was himself a keen collector, donating material to museums in Bristol, Cambridge, London and Stroud (Cleevely 1983, pp.124, 337) with a major part of his personal collection remaining at Cheltenham College.

On 8 July 1930 the salaried curator White, who 'assisted' the Honorary Curator (always on the School staff), died. White was a son of Henry White who had long been a naturalist and taxidermist in St Luke's Terrace, Cheltenham. On his father's death, J. C. White was appointed in 1896 to the College Museum where his knowledge of botany, ornithology, zoology and taxidermy proved invaluable (Cheltenham Chronicle, 12 July 1930, p.2, Cheltonian 1930, pp.257-258; Report, 37, p.3). So within two years the Society and the Museum had lost both leaders; a list of curators (taken in part from the South West Federation of Museums Handbooks) shows subsequent changes:

Hon. Curator (a master on the staff)

1895	C. I. Gardiner
1928 1933	H. F. Jones
1934 1944	S. E. Baker
1948 1952	C. H. Boutflower
1955	K. G. White

Assistant Curator (salaried)

1896 1930	J. C. White
1930 1936	P. S. Peberdy
1936 1939	S. D. Scott (now Acting Curator from School staff, retired)

Philip Story Peberdy (born 1908) came from the City of Leicester Museum to succeed White at an initial salary of £170 a year in November 1930, until April 1936 when he was appointed to the post at the British Guiana Museum (advertised in the Museums Journal, February 1936, p.vi). The writing already seems to have been on the wall for the College Museum, as in June 1936 D. W. Herdman (Curator of Cheltenham Town Museum) could write to warn Peberdy that 'Lord [Arthur Hamilton] Lee [1868-1947, Life President 1917-1939 of the College Council] takes a very adverse view of the Cheltenham College Museum, and any further development in connection therewith' (letter in Cheltenham Museum archives). Peberdy's reply of 21 July 1936 noted 'the apathy towards the collections under my charge during the past five years was the main reason for my desiring a new post' abroad.

In 1931 Peberdy had made a start by relabelling all exhibits in the Museum (Reports, 38, pp.14-15), at a time when there were 591 members of the Natural History Society! An unexpected donation is recorded in the College Donations Register for October 1932 as 'Specimens of Minerals and Fossils from Cheltenham Public Museum (D. Herdman - Curator) incorporated into the College's General Collection' (see also Reports, 39, p.14). This transfer may explain the fate of some of the lost collections formerly in the Town Museum. Two photographs of the School Museum in Big Modern appear in the College Prospectus of 1933 preserved in the College Archives, confirming the College's commitment to it till then.

In 1933 a rough inventory was made of the contents of the whole museum, of forty-six typed pages (copy in Liverpool Museum archives) which surveyed the geological collections in a mere two pages (pp.33-34)! These noted four large cases with fossils (approx. 8645 specimens), three cabinets of minerals (approx. 348 specimens), and a number of additional cases and cabinets containing unspecified geological material, and 'suspended on the north and west walls are the remains, mounted in cement and plaster, of fourteen specimens of fossil Plesiosaurs, Ichthyosaurs and one fossil fish'. The summary of the Museum's history appended is merely a copy of that which appeared in Report, 37, pp.45-47, for 1930. By then a total of 596 donors to the Museum in its first sixty years of existence had been recorded.

The retired Master-cum-Curator appointed in 1936, at a 'salary' of £20, was S. D. Scott (1873-1946); he was responsible for depositing the syntype of Nautilus subtruncatus in Bristol City Museum in 1942 for safekeeping during the Second World War (Appendix 1). In 1937 he took the opportunity 'while cleaning the walls ... to reset some of the Saurian skeletons which had become loosened. These were part of Pierson's original benefactions to the Museum. Many of them were found in the Lias at Tewkesbury' (Report, 44, pp.5-6). Some of these fourteen specimens can be seen in Fig. 8, which may aid their recognition. While certainly recorded (see above) as part of the Pierson donation of 1870, these seem certain ultimately to have derived from the James Dudfield sale of 1843 (p.180) via the older collections of the Cheltenham Institution.

The Second World War and its legacy

With the outbreak of war in 1939 the school was removed to Shrewsbury, the school buildings commandeered by the Government and the Museum closed (Report, 46, p.2). When the school returned to Cheltenham in May 1940 they soon lost their acting curator, S. D. Scott, who was given charge of the Stroud Museum in place of C. I. Gardiner (died December 1940) (Report, 46, p.2; 48, p.2). With no proper curator and the diversion created by war-time, the results can be imagined. When the first post-war report (48) was issued after a gap of four years, there was simply no Geological Section report or any mention of the Museum. In 1947 the first new natural history donations to the Museum are recorded (Report, 49, p.2) but it was not until 1948 that the re-opening of the Museum was discussed (Report, 50, p.20). The collection was to be moved again, from its home in Big Modern to the west racquets court, which had been refurbished, but the writer noted ominously that 'the prospect of cleaning and rearranging the rest of the collections, Minerals, Fossils and so on fills the Secretary with dismay. The amount of time and work needed will be staggering and a long time must elapse before the work is anything like complete. Many of the exhibits have to be "written off" as War Damage' (Report, 50, p.2). With no Geological Section in the College Natural History Society any longer, informed help was hard to find. In 1949 the Museum was re-opened again in its new home (Report, 51, p.2), but the archaeological collection, although available, was still awaiting arrangement and while the geological collection had 'been unpacked and checked at present there is no means for displaying it'. At this time for some reason all the geological collections began to be referred to as 'Mr C. I. Gardiner's collection' (Report, 51, p.2).

In 1949-1950 the geological collections at last received some attention:

'Mr C. I. Gardiner's collection [sic] of Fossils has been sorted by the untiring efforts of Mr P. G. Channon [sic], assisted by Mr Clayton. Mr Channon, a leading authority on Fossils, undertook and completed the task although he was about to leave England to take up an appointment in Australia and was very busy indeed. We are most grateful to him. The collection had fallen into a state of utter confusion, aggravated by the removals during the war; the catalogue was hopelessly out of order and out of date; many specimens had been imperfectly treated and were in consequence of no value. Faced by this chaos Mr Channon decided to save all he could in order to build up a comprehensive teaching collection. He prepared an entirely new catalogue, which he was not able to finish until he was on his way to Australia. This he posted to us and Mr Clayton is now engaged in re-numbering the specimens and packing them into boxes so that they may be conveniently stored and readily accessible whenever they are needed. There is not space enough in the Museum to allow us to display them.' (Report, 52, p.2).

The late Percival Joseph Channon OBE was an enthusiastic local geologist who then lived at Bredons Norton, near Tewkesbury, with some well

considered views on geological collecting, recording and curation (Channon 1950). He might seem to have been misinformed that the chaos to which he so nobly attempted to bring order was merely the C. I. Gardiner collection. From the surviving material it is clear that he catalogued as 'C. I. Gardiner' collection whatever was rescued of all the old College Museum collections. But in a letter written to the curator C. H. Bouflower on 19 July 1950 just before he left England, Channon adds 'I would like to point out that there appears to be at least four [geological] collections, and that only some 50% or so of these appear in Mr Gardiner's old catalogues' so evidently Channon was aware of the problem if unable to solve it. He continues 'it should also be noted that it has been possible to save only about 50% of the whole lot, owing to the disgraceful way in which they have been mixed and tumbled I am sorry it has not been possible to make a better job of the collection, but trust that our efforts will have rendered it at least useful for teaching purposes' (letter in Liverpool Museum archives).

Channon's catalogue of the entirely re-curated collection survives (at Portsmouth Polytechnic, Department of Geology). It was now arranged in stratigraphic order. Specimens were renumbered and old numbers recorded, some identifications were copied from old catalogues while some specimens were redetermined. Channon's catalogue ends unfortunately 'many specimens listed in the old catalogues are omitted from this list because they are either missing or cannot be sorted from the mass of unlabelled specimens with any certainty. This being so they are valueless and specimens without new number tickets should be [and were] discarded'. This was a sad end to these fine collections which still comprised some 10,000 fossils in 1933. Nowadays such unduly pessimistic disposal would - we hope - not be countenanced (Knell and Taylor 1989).

But with the lack of interest in geology at the College and the low state of the College Natural History Society, whose last report was issued for 1952 (Report, 54), there was no interest in the collections. There was no permanent curator and people who wished to see the collections were to 'apply to the Secretary of the School' (Report, 53, inside cover). The last recorded geological donation in the Donations register was in June 1959 when A. J. Symonds presented his grandfather-in-law Charles Pierson's Geologist's Walking Stick; 'with compass, telescope, brass ink container, pen holder, glass bottle, dividers, candle stick and candle' according to a letter preserved at Liverpool Museum. It would be fascinating to locate this tool of the Victorian geologist's trade, if it survives.

These geological collections were now at the mercy of predators. The successful applicant was Brian Daley, from the then City of Portsmouth College of Technology, who wrote in 1962 to various Museums seeking minerals, rocks and fossils for teaching (letter dated 19 November 1962 in Cheltenham Museum archives). At the College, the space used for Museum storage in the old racquets court was needed for expansion, and in March 1963 the College

authorities asked the Curator of Gloucester City Museum (J. N. Taylor Esq.) to assist them in disposing of parts of the Museum. Taylor was able to tell Liverpool Museum of the availability of zoological material and Daley at Portsmouth about the geological collections. Daley promptly wrote to the College on 4 April, just beating Liverpool Museum to the draw! The main geological collection then passed to Portsmouth Polytechnic (as it now is), while some natural history material went to Liverpool and some archaeological material to Cambridge University. But a lot of material was not then disposed of, being put into store (in a room off Room 30, above Old Junior) in August 1963.

In 1970 HST visited the College to look at what material had not been transferred to Portsmouth, and found one of two ammonites recently cited by Arkell (1951-1959), almost certainly wrongly, as having formed part of the C. I. Gardiner collection rather than that of the old College Museum (Appendix 2; the specimen is now BMNH C82796, the other is C89608).

In 1976 the April issue of the Museums Bulletin announced (vol.16, p.4) the complete disposal of the remaining Natural History collections from the College Museum which passed to Liverpool Museum, by purchase. Liverpool also purchased thirteen fossil fish (Reg. nos. 1976 159 A-N), including two Dapedium politum from the Lower Lias, one from Lyme Regis (ex Rev. W. B. Cardew).

The geological material now at Portsmouth Polytechnic chiefly comprises molluscs from the Great Oolite at Minchinhampton, and molluscs and brachiopods from the Upper Lias and Inferior Oolite of the Cotswolds; it has suffered some losses even since 1950 (Cleevely 1983, p.81). The 4,500-5,000 specimens have been computerised (M. J. Barker in lit. 10 December 1985).

But some material still remains at the College, including an ichthyosaur paddle with vertebrae seen there in 1985, and probably that visible in Fig.8. But of the other large Saurians no-one seems to know their fate!

THE MUSEUM OF CHELTENHAM LADIES COLLEGE

Cheltenham Ladies College was founded in 1853 as a Church of England day school, with the close involvement of the Principal and Vice-Principal of the twelve years old Boys College. It was a remarkable development in the education of women.

By 1895 it boasted a Museum, within the science department, 70 by 26 feet in size (Meade 1895, p.288). The school's historian records that it was the inspiration of Miss Dorothea Beale (1831-1906), College Principal from 1858 to 1906 and the part subject of one of the more famous clerihews in English, who 'Cupid's darts [did] not feel'. She was a true pioneer of the education of women in Britain, and it is interesting to find that she included provision for a Museum.

Soon after Beale's arrival the focus for science teaching became physical geography (Kamm 1958, p.56), as it was thought a safe subject for girls. In 1894 a new College library was built and the Museum occupied the floor above (Clarke

1953, p.81). Geography teaching provided the stimulus for a model of the physical geography and geology round Cheltenham made by Miss A. F. Parkinson, a photograph of which was published by Richardson (1904, p.v, pl.xiii). Such geographical focus continued until at least 1914 when E. M. Sanders was awarded her Paris doctorate for a thesis on the Region of Bristol while 'Geography specialist at the College' (Sanders 1914).

Richardson also recorded (op. cit., p.211) the presence of one of the geological treasures of the College Museum. This was the ichthyosaur Temnodontosaurus platyodon (Conybeare) found in 1899 while digging the foundations for the College's first purpose-built boarding house, 'Glenlee' in Malvern Road. The specimen was fourteen feet long (BRSMG Geology File FER2) and it remained in the Museum until August 1917 when it was lent to the Town Museum (Cheltenham Looker On, 6 October 1917, p.8). It was returned to the Ladies College on 29 July 1932, when Cheltenham Museum no longer had space for it (letter to Miss E. N. Fergusson in CHLGM archives).

Then in 1934 the College Museum was divided into new classrooms, 'but there [were] many who remember vividly some of its contents ... [including] the ichthyosaur whose remains had been found near the playing-field when the foundations were dug for Glenlee' (Clarke 1953, p.81). The fate of this specimen is thereafter unknown. In 1962 the Misses Fergusson of Cheltenham tried, without success, to locate it. It was not there when Justin Delair, in 1968, and Wendy Sayer, in 1973, worked through the remnants of these collections. In 1972 Miss S. M. Sadlier, who was on the staff of the College from 1935 to 1969 and was latterly Vice-Principal, kindly wrote to HST (in lit. 2 July 1972), 'I am sorry I cannot help you over the Museum which we once had at College. It was dispersed during the War when I was a junior member of staff and it was only years later that I tried to trace what had happened but the Bursar who arranged the dispersal had died and all I could discover was that various items had been given to the Museums in Gloucester and Cheltenham and also to one of the Colleges in Oxford. My efforts to trace them failed and I cannot therefore give you any information about the geological specimens. Our buildings were taken over during the War and it was a time of great confusion and apparently no records were kept. It is a great pity'. No more recent information has come to light and any further news would be welcomed.

THE CHELTENHAM NATURAL SCIENCE SOCIETY

The Cheltenham Naturalists' Association of 1867 soon foundered, like its ancestor; but the need for some such local society remained, and a new Cheltenham Natural Science Society was established in 1877 (Austin 1928, p.523). Papers were read at its meetings and it seems to have led a rather desultory life until 1907 when new rules were agreed and it entered a new, if shortlived, lease of life under the Presidency of E. T. Wilson, father of the Polar explorer, and Linsdall Richardson as Honorary Secretary. It published its Proceedings in a New Series from 1907 until at least the First World War.

The Society provided a forum which drew together local amateurs as well as teachers from both Cheltenham College and the Ladies' College. One of its objects was as always the 'exhibition of specimens' (Proceedings, NS, 1, 1908, p.xxi) and so it is likely to have provided material for the Town Museum, just as the Cotteswold Naturalists' Field Club did with the Cornford Collection (see p.201); as neither Society could maintain its own museum it naturally chose the local public museum as a repository.

THE COLLEGE OF SAINT PAUL AND SAINT MARY

The present College of Saint Paul and Saint Mary is part of the College of Further Education, and was formerly two separate teacher training colleges for men (St Paul's) and women (St Mary's). St Paul's College lost its 'fine collection of geological specimens' in January 1914 when a fire destroyed the geological laboratory and other buildings (CHLGM archives). Where this collection came from is unknown; it may possibly have contained material now 'lost' from the other collections described here. Later, in the years before the Second World War, Charles R. Mapp initiated and developed the present geological collection for teaching purposes and may have (mis)appropriated specimens from the Town Museum collection (see below).

CHELTENHAM ART GALLERY AND MUSEUM

The growth and decline of the geological collections

Virtually nothing remains in Cheltenham of most of the collections so far described, largely because the present Art Gallery and Museum, operated by the Borough Council, did not exist before 1907, and was geologically inactive in the years after the Second World War, when the College Museum was sadly dispersed. Nevertheless, the Museum has an interesting geological collection with some valuable material.

Cheltenham Town Council opened its Art Gallery in 1899 alongside the Library and the Schools of Art and Science in Clarence Street, after the third Baron de Ferrieres had donated the cost and his collection of paintings (Annual Reports of the Art Gallery and Museum Committee, Cheltenham Borough Council, 1899-1915). The Schools moved out in 1905 and the Museum was opened in 1907 in the space thus vacated. The Art Gallery and Museum has remained ever since in the Clarence Street complex, physically intertwined with the Library. The Town Council operated the Art Gallery and Museum together with the Library under a joint Librarian-Curator until 1974. Following local government reorganisation in 1974, the library was transferred to Gloucestershire County Council but it remains in the same building complex as the Art Gallery and Museum, now operated by the local District Council, Cheltenham Borough Council (Figs.10, 11).

The growth of the geological collections started in 1888, before the Art Gallery and the Museum were built, when Mr Charles Pierson donated a

'large collection' of fossils which had to be kept in store until at least 1900 (see below). Thereafter the collections grew by donations from local geologists such as S. S. Buckman, J. W. Gray, L. Richardson, and R. P. Wild (who seems to have established one of the earlier displays in 1920, as recorded by his catalogue of the rock specimens; Wild 1920).

Charles R. Mapp, of the College of St Paul and St Mary, was also involved in the Town Museum's work, serving on its committee for many years and reorganising the displays in 1931-1932 (in the tidy, educational style of the time) with a £250 award from the Carnegie United Kingdom Trust. These had beautifully hand-written labels and text, with original photographs and hand-drawn diagrams, and illustrations cut from publications. Eighteen bays of these displays survived until 1989. He may possibly have removed some specimens from the Museum, such as the Euthynotus now at the College of St Paul and St Mary (see below). Certainly some material also then went to the Cheltenham College Museum (see p.194).

The fortunes of all geological collections at Cheltenham (like so many other places) entered a period of sharp decline after 1939, to reach their nadir in the 1950s and 1960s; the Town Museum was no exception. Existing records suggest that the staff took little if any interest in their geological collections, and addition of new material only occurred through the indiscriminate acceptance of gifts and enquiry specimens. An equal lack of discrimination informed the partial dispersal of the existing collections. For example, D. W. Herdman, the Curator of the time, transferred material to Bristol City Museum (BRSMG Acc. No. 36/1946), but unfortunately neither museum listed the specimens involved! More justifiably, in 1967 the British Museum (Natural History) also abstracted the holotype of the ammonite Denckmannia bredonensis in a distinctly unequal exchange for several ammonites from the Gault Clay of Folkestone. However, other type material has remained in the collections (see below).

The exhibits left from the reorganisation of the 1930s remained, untouched and unimproved but in fairly good order, until the mid 1970s when most of the display cases were cleared into drawers. Unfortunately those responsible simply put each specimen and label loose in the drawer; few were numbered, so this soon led to specimens in one corner and labels in another - destroying the value of a large part of the collection, and requiring a great deal of work to restore the remainder. It is no consolation to reflect that many other geological collections have also been irreparably damaged by people who 'tidied them away' under the guise of modern and purportedly professional curatorship (e. g. Brears 1984).

In 1978, Gaynor Andrews (former Assistant Curator of Fine Art) was told to clear out the geological cabinets to make space for works of art on paper. She moved most of the material to polythene bags in large cardboard boxes, and later to lidded fibre museum boxes. Mercifully, however, she painstakingly recorded the source drawers of loose specimens and labels, as well as any clear association of specimen and label.



Fig. 10. Cheltenham Art Gallery and Museum have shared the Clarence Street building with the Library since the turn of the century (Area Museum Council for the South West).

Her careful curation thus saved the collection from complete ruin. From 1979 the collection was stored in an attic room in the annexe. The drawers from some cabinets and the fibre boxes were placed on open shelves. Since then various specimens have emerged from other places in the museum and its large object store, and especially from the schools loan store.

The collection has lately been almost completely unused, because of its inaccessibility and disorder, and because the museum staff have lacked any specialist geological knowledge. Only a small part of the 1930s display remained in the main museum until the current reorganisation, and a few of Edward Wilson's minerals have been put in the exhibit on Wilson (see p.191). Several specimens have been used in a 'Hidden Treasures' temporary exhibition scheme which puts material from the stored collections on temporary display at the same time as publication of an article in a regular column in the Gloucestershire Echo. A few items are used for school loans. Very little has been published about the collections apart from brief summaries by Cleevely (1983) and Steward (1986). HST examined the collections in the 1970s. T. Pettigrew (Sunderland Museum) spent a week in 1978-1979 on initial sorting and documentation, and Dr M. L. K. Curtis (Bristol City Museum) spent a few days curating some of the minerals and advising on the purchase of a register, specimen labels and self-sealing polythene bags. Their work was later to be very useful. Otherwise the collection was unseen and almost forgotten by the outside world.



Fig. 11. The office annexe on the other side of the street from the Art Gallery and Museum, where the geological collection was formerly housed (AMCSW).

The collection's size and state demanded at least several months' specialist curatorial effort - far more than any nearby museum could spare. Nevertheless there was (and still is) no prospect of recruiting the service's own specialist. The only sensible option (other



Fig. 12. Portrait of Captain R. P. Wild, the mineralogist and Inspector of Mines in the Gold Coast, by Flora Tomkins (painting in Cheltenham Art Gallery and Museum) (AMCSW).

than neglect or disposal) was to use temporary specialist curators to restore the collection to such a standard that it could be maintained easily by non-specialist curators. Cheltenham thus stands between museums with collections small enough to be recurated by outside staff, and larger museums which need to recruit their own specialist curators (Taylor 1987).

In 1982-1983 the Area Museum Council for the South West (AMCSW) carried out a survey of geological 'conservation' work which its member museums wanted done. In return for work on the collections, Cheltenham promised a contribution towards the cost of the AMCSW post of Geological Conservator/Preparator (later retitled Geological Officer) which MAT took up in 1983.

Content of the geological collections

The collections number several thousand specimens. They are not yet fully curated and some of the missing specimens mentioned below may yet turn up at Cheltenham or elsewhere. The account here can only be a preliminary one and we hope that eventually someone will complete the job (perhaps looking also at the other linked Gloucestershire collections, e. g. those of Hutton, Richardson and Upton, see below).

Documentation was almost non-existent in 1983. Gaynor Andrews and Tim Pettigrew had compiled a card index of geological accessions from the Museum's central records, but these did not list

specimens as such. Only a few specimens were labelled and many of the rest had been separated from their labels in the 1970s removal. With a few exceptions noted below, the specimens were unnumbered. The physical state of the specimens was variable. Dirt and dust, and physical damage due to poor storage, were by far the commonest problems. There were rather few specimens with more specialised problems, such as pyrite decay.

Rocks and minerals. The rock and mineral collections include useful general suites of specimens from all over the world, although the minerals in particular have suffered from past dirt and neglect. The total number of specimens is not known but is of the order of 1,000, ignoring Drift and soil specimens. The rock collection's largest component consists of some 300 hand specimens from various localities (catalogued and described by Wild 1920; Fig.12). Virtually all these specimens have been traced, including Antarctic material collected by Raymond Priestley and other members of the British Antarctic Expedition of 1901-1904.

There are a number of samples of Drift and soil material. A collection of local Quaternary gravels and sands made by J. W. Gray (see below) was briefly described by Gray (1927) but the 'typed copies of the Notes, etc. in full [which were to be] placed in the library of the [Cotteswold Naturalists' Field] Club and in the Cheltenham Museum' have not yet been traced in the Museum. Further samples in this category were donated by C. R. Mapp and A. W. Jamieson.

The minerals comprise a range of specimens including semi-precious stones. The Museum purchased the collection of the engineer Robert Stephenson (see p.202), but none of these important specimens have so far been identified.

Borehole material. Linsdall Richardson, well known for his publications on ground water supplies, donated samples from several local boreholes drilled for water and cited most of those samples as being in the Museum. Only one of the two cited specimens from the Lewis Lane, Cirencester, Borehole of 1904 has been found (Hibbert and Richardson 1904). The cited material from a deep well-sinking at Leckhampton Hill (c. 1910) has not been traced (Richardson 1910a). However, the cited samples from the Kemble Borehole of 1911 all survive (Richardson 1913). Most, but not all, of the cited specimens from the Tetbury Borehole of 1915 (Richardson 1915a, 1915b, 1930) were transferred to Bristol City Museum as part of the 1946 transfer (15 specimens; BRSMG Geology File 112). Most samples from the Shipton Moyne No.2 Borehole of 1914-1915 cited by Richardson (1915c), and some uncited samples, survive at Cheltenham, as well as a few more from the Shipton Moyne No.3 Borehole (Richardson 1919). As for the rest, some may be in the British Geological Survey collections, either in the Borings Collection or more likely in the Richardson Collection. See Fig.13.

Fossils. The fossil collection mostly comprises material from the local Jurassic of the Vale of Severn and the Cotswolds. It includes some of the personal collections of Hutton and Richardson (see below) but their material has

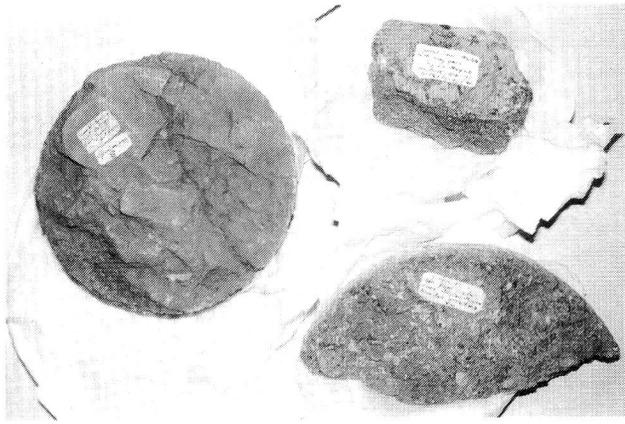


Fig. 13. Core specimens from the Kemble Borehole 1911 and the Shipton Moyne Borehole 1914-1915, in Cheltenham Art Gallery and Museum, labelled and cited by Linsdall Richardson (AMCSW).

been partly dispersed to the BM(NH) and Bristol City Museum. Some type and cited material still survives at Cheltenham but more remains untraced. A formal listing must await full curation of the collection.

Still at Cheltenham are the seven syntype spicules of the Inferior Oolite sponge Reniera oolitica Richardson and Thacker, 1920, from the collection of Charles Upton (see below) (Richardson 1910b; Richardson and Thacker 1920).

Sayer (1974) noted the presence of a syntype of the brachiopod Stroudithyris randwickensis Richardson and Upton, 1913, the possible holotype of the MS species Pseudoglossithyris spatulata L. Richardson MS, and topotypes of other species in the Richardson brachiopods at Cheltenham.

The holotype of the ammonite Denckmannia bredonensis Buckman, 1903, was transferred to the BM(NH) in 1967; Phillips (1977) listed it as Phymatoceras bredonensis.

Crick (1920) mentioned a collection of dibranchiate cephalopods from the Upper Lias of Alderton as being at the Museum, and that it included 'examples of both Geoteuthis and Teuthopsis as well as some detached hooklets'. He figured a specimen of Geoteuthis and one of T. brunelii, describing another of G. agassizii. None have been located at Cheltenham but the G. agassizii at least is now at Bristol (BRSMG Ce3230).

Richardson and Walters (1922) described an excavation in the Lower Lias at Cheltenham Corporation Sewage Works, citing various specimens then in the Cheltenham Museum. Trueman (1922) further cited, described and figured some of the ammonites, erecting the new species Arnioceras juncticosta. None of these has been traced at Cheltenham but some at least were transferred to Bristol in 1946 and three figured and thirty-three cited specimens survive in the collection there (BRSMG Ce3231-65); unfortunately, the holotype of A. juncticosta remains untraced.

Another ex-Cheltenham Town Museum specimen at Bristol is BRSMG Ce97, a specimen of the

ammonite Tulites subcontractus from Laycock, Sherborne, and possibly cited in the Shaftesbury Memoir of the Geological Survey (*vide* H. S. Torrens). Cope *et al.* (1980) referred to unspecified Cheltenham Museum material in their revision of British Jurassic stratigraphy.

The holotype of the decapod crustacean Eryon richardsoni H. B. Woodward, 1911, is in the collection at Cheltenham. It was collected by Harriet Holland from the Upper Lias of Dumbleton Hill (H. B. Woodward 1911; Woods 1924-1931).

A. S. Woodward (1911) described two specimens of the fish Euthynotus from Dumbleton Hill as the first records of that genus from the English Lias. Dr M. J. Simms (pers. comm.) pointed out that the descriptions closely fit two specimens (Fh9 and 10) in the teaching collection of the College of St Paul and St Mary; these are labelled as coming from Gretton Hill near Dumbleton Hill but Woodward may well have mixed up the locality with the former home of the collection at Dumbleton Hall. If Woodward was correct in citing their repository as the Cheltenham Museum, then they must have strayed to the College at some time, probably under Mapp's auspices in the 1930s.

The Cornford and Lingwood collection includes remains of Pleistocene mammals excavated in 1871 from King Arthurs's Cave in the Wye Valley (Symonds 1880; Jackson 1937), now curated as part of the archaeological collection.

Finally, a plaster cast of an ichthyosaur found in the museum's furniture store in 1982 (CHLGM 1931, 11a) appears to be one of the very few casts remaining of an original destroyed in the air-raid on Bristol City Museum in November 1940. This specimen (BRSMG Cb2464), supposedly from Saltford near Bath, had an involved history (Taylor and Clark, in prep.; BRSMG Geology File PUR 1). Owen (1840) described preserved soft tissue in its tail fin but included it in error as a syntype of Ichthyosaurus latimanus Owen, 1840. Later, Lydekker (1889, pp.53-54) described it as a paratype of I. conybeari Lydekker. The cast was purchased from a Cheltenham junk shop in 1931; its previous history is unrecorded but it must be the cast that the Bristol Institution supplied to a Purnell Bransby Purnell (1791-1866) in 1847. Purnell lived at Stancombe Park near Dursley (Burke 1921, p.1459) and his partly geological personal museum there was thrown open to members of the CNFC on 28 August 1855 (Baker 1860, p.iii). This late casting date is consistent with differences between it and earlier casts of the same specimen (e. g. BMNH 1065), indicating changes to the specimen itself or modifications to the moulds.

Some major donors and collectors

The following list summarises some of the known donors to the CHLGM collection, and is based on the Museum's archives, Art Gallery Subcommittee Reports (henceforth Report CHLGM), and other references that we have located.

ACTON, Miss Anne Moore (died c. 1904-1905). Collection of 'shells and minerals' given by her sister, Miss Moore Acton (5th Report CHLGM, for 1904-1905, p.24).

- BIGOT, Prof. [A. P. D. (1863-1953)]. Some specimens of Ostrea deslongchamps and Q. lotharingica from the Lower Callovian of Calvados are labelled 'from Prof. Bigot 17.1.'08'; this is A. P. D. Bigot (Cleeveley 1983).
- BUBB, E. Maude. Presumed to be the widow of Henry Bubb (born 1847) JP of Ullenwood, nr. Cheltenham (see entry for Wright). Henry disappears from CNFC members lists between 1929 and 1930.
- BUCKMAN, Sydney Savory (1860-1929). The famous Jurassic stratigrapher, who donated some specimens to the museum (4th Report CHLGM, for 1903-1904, p.24), including the type of Denckmannia bredonensis Buckman (1903) originally given to him by Newton (see below).
- CALLOWAY, Charles (1838-1915). Calloway was an important local geologist and friend of Linsdall Richardson. On his death his geological collection was offered to the Town Museum (Torrens 1988b) and accepted, as confirmed by an entry of 'rock specimens and maps' under his name. The Cheltenham collection is thus worth checking for any 'lost' specimens, such as the six missing brachiopods figured by Davidson (1883-1884) (also Torrens 1976; Cocks 1978).
- CORNFORD, Rev. [Edward] [1833-1898]. In 1903 Mrs Cornford presented 'a large oak cabinet containing the local fossils collected by her late husband Rev. E. Cornford' (4th Report CHLGM, for 1903-1904, p.24). This is the collection of the late Rev. E. Cornford first donated to the CNFC in 1897 (Colchester-Wemyss 1898) which the Club Secretary, S. S. Buckman, passed to CHLGM in 1903 (correspondence in CHLGM archives). The collection may have been dispersed later to St Paul's by C. R. Mapp.
- GRAY, Joseph William (died 1935). Gray was actively interested in the local Quaternary deposits (Gardiner and Herdman 1935) and donated a collection of Drift material from the Cotswold-Malvern region (Gray 1927). He also donated other material, such as lava from Mount Erebus.
- HOLLAND, Harriet Sophia (c. 1835-1908), later (after 1865) Mrs HUTTON. Harriet Sophia Hutton nee Holland, was the eldest daughter of the Lord of the Manor at Dumbleton, Gloucestershire (Torrens 1978b; Cleeveley 1983). Her collection from the Upper, Middle and Lower Lias of the quarries near Dumbleton Hill, especially at Alderton Hill and Gretton, was well known (Guise 1865; Wright 1865; Richardson 1929). At least part of this collection appears now to be at Cheltenham, including some interesting Upper Liassic insects and the type of Eryon richardsoni H. B. Woodward (see above). An 'important gift of rare fossils found at Dumbleton Hill, Glos., was made by Miss Holland' (11th Report CHLGM, for 1910-1911) after H. S. Hutton's death; this Miss Holland was her daughter (see below). Butt (1909, p.198) reported that the Holland collection was then intact at Harescombe Grange and that Richardson was working on it. Her material came to the museum via Richardson soon afterwards (also see H. B. Woodward 1911). It is not now clear which specimens were Holland's, but some, particularly some of the insects, show a markedly older style of label or numbered tag.
- HUTTON, Harriet Mary (1873-1937). Harriet Mary Hutton was the daughter of Harriet Sophia Hutton (c.1835-1908; see above) and a noted amateur collector in her own right (Torrens 1978b; Cleeveley 1983). She lived near Stroud and then Dursley, concentrating on the Inferior Oolite of those areas. Her collection contained much scientifically important material which was apportioned on her death between the British Museum (Natural History), Gloucester City Museum, and Reading University. The BM(NH), then Gloucester, Stroud District Museum and finally Cheltenham are said to have taken their pick of the remainder, but there is no record of any such accession at Cheltenham. Other material is in the J. W. Tutcher collection, Bristol City Museum (R. D. Clark, pers. comm. 1988).
- LINGWOOD, [Robert Maulkin (c.1813-1887)]. A Lingwood donated King Arthur's Cave material, together with the Rev. Cornford. He was presumably either the botanist and entomologist Robert Maulkin Lingwood (Cleeveley 1983), whose gravestone in Leckhampton churchyard records his death on 2 June 1887, aged 74, or possibly Richard Sole Lingwood who is recorded on another gravestone as having died on 17 December 1873, aged 60; the latter was an Annual Subscriber to the CLPI from 1843 to 1848. These two Lingwoods are clearly relatives as R. M. Lingwood married an Elizabeth Sole in 1836.
- MAPP, Charles R. (1887?-1955). Mapp was Lecturer in Geology and Geography at St Paul's Training College (now the College of St Paul and St Mary). He bequeathed a wide range of geological, Egyptological, oriental and ethnographical material to Bristol City Museum, and most of his library to W. W. Jervis, Professor of Geology at the University of Bristol, and possibly other material to Derby City Museum (BRSMG Geology File MAP 1; Cleeveley 1983). Much of his geological material went to St Paul's College (Dr J. Angseesing, pers. comm. 1984) and some may have gone to Cheltenham Museum.
- NEWTON, Isaac (fl. 1903-1921). A Surgeon-Major in the Indian Army Medical Service, he donated fossil material which certainly included the holotype of Denckmannia bredonensis S. S. Buckman, 1903 (Cleeveley 1983; but not in the museum's accession records). He disappears from CNFC members lists between 1921 and 1922.
- PAINE, A. E. W. (died 1929) [Anon. 1930, p.203]. In 1930 'Miss E. A. Paine donated all the 8,000 Cotteswolds flints collected by her brother, the late Mr A. E. W. Paine' (Proc. Cotteswold Nat. Fld Club, 24, p.16). These are mostly worked flints and appear to be curated as part of the archaeological collections. S. S. Buckman named the ammonite Paineia (= Brasilia S. S. Buckman) after him.

PIERSON, Charles (c.1806-1891). The founder of the Cheltenham College Museum (see p.189). The Art Gallery Committee Records for 20 June 1900 refer to receiving 'the collection of fossils presented to the Town by Mr C. Pierson in 1888, and stored at Shirer and Haddon's'; this was a 'large and valuable collection' (1st Report CHLGM, for 1899-1900, p.24).

RICHARDSON, Linsdall (1881-1967). Richardson had unique knowledge of the geology of the Cotswolds and Severn Valley, producing many papers and several Geological Survey Memoirs on the area's geology and water supply. His large collection was widely dispersed and some went to the British Museum (Natural History), what is now the British Geological Survey, Imperial College, and the University of Reading (Cleevely 1983). He made several donations to the Cheltenham collection, including sets of borehole samples (see above) and a reprint collection now in the Local History Library. Some of the Richardson material was included in the 1946 transfer to Bristol. The material now at Cheltenham includes collections of serpulids, brachiopods and belemnites, including material from the Sudbury Tunnel originally collected by Vaughan (Cleevely 1983), and described by Vaughan and Reynolds.

STEPHENSON, Robert (1803-1859). The Museum purchased a 'splendid collection of minerals made by the famous engineer Robert Stephenson' (14th Report CHLGM, for 1913-1914, pp.13, 16). Robert Stephenson is known to have been interested in metalliferous mining, for example in Cornwall and Latin America (Venezuela) where he was an early collector, while latterly he was the owner of the coal pit at Snibston, Leicestershire, now owned by Leicestershire Museums Service (Rolt 1978). Unfortunately none of his important specimens have yet been traced.

UPTON, Charles (died 1927). Upton was a solicitor who lived in Gloucester and practised in Stroud. He later became Curator of Gloucester Museum. He collected local fossils and appears to have made something of a speciality of sampling microfossils, often collaborating with Richardson. S. S. Buckman named the ammonite Uptonia after him. It is unclear what happened to his collections after his death (Torrens 1979a). The brachiopods were sold to Gloucester Museum and some more material exists in the BM(NH), as well as syntype material of the sponge Reniera oolitica now at Cheltenham.

WACHSMUTH, Charles (1829-1896). Wachsmuth was an important collector of crinoids from the Carboniferous of the Northern United States and the Museum has a small box of specimens from him.

WILD, Capt. Robert Powley (1882-1946). Captain Wild was trained at the Camborne School of Mines and worked in Cornish mines until 1914 when he joined the Army (see biographies in Anon. 1984; N. R. J. 1947). He was Inspector of Mines in the Mines Department of the Gold Coast (now Ghana) from 1920 to 1938, and donated some minerals from that area; he had already written a handlist of the museum's

rock collection (Wild 1920). The Museum has his retirement 'trophy' of a lump of native gold on a wooden base. Wild is known to have donated 'valuable collections' to various museums (N. R. J. 1947) but this may refer to ethnographical rather than purely geological material. Wild made several donations to Cheltenham between 1913 and 1930; other geological material is also in the Bristol City Museum collection.

WILSON, Dr Edward A. (1872-1912) (p.191), the Antarctic scientist. His father donated specimens including what appears to be his son's boyhood collection as well as items collected from New Zealand and the Antarctic material collected by Raymond Priestly. Wilson's wife also gave further material. The Museum has a selection of Wilson's paintings, personalia and mementoes of the Antarctic expeditions.

WILSON, Dr E. T. (p.191), Father of the above and a donor of geological material in his own right, e.g. rocks mentioned by Wild (1920).

WRIGHT, Thomas (1809-1884). Wright was a surgeon at Cheltenham Hospital who devoted his leisure to palaeontology, producing Palaeontographical Society Monographs The British Fossil Echinodermata of the Oolitic Formations (1857-1880), The British Fossil Echinodermata of the Cretaceous Formations (1864-1882), and Lias Ammonites of the British Islands (1876-1886). His life predated the Cheltenham Town Museum collection but Wright's collection was dispersed over many years by the London dealer F. H. Butler (see p.185). A loose MS sheet in the Cheltenham collection records the discovery of some cigar boxes full of specimens 'in the cellar at Mr Butler's' in 1900; the writer, presumably Henry Bubb JP, in September 1902 'secured ... for the Ullenwood Collection' seven Middle Jurassic species of brachiopod, noting that other drawers of Wright material were still there but in great disorder.

Rescue curation

In 1983 Cheltenham Art Gallery and Museums contributed funding for the newly established AMCSW post of Geological Conservator-Preparator in return for 'conservation' work (which was fortunately not strictly defined, as the main priority turned out to be for curation and storage rather than specialist conservation). While some specimens certainly needed remedial conservation, and many required careful specialist cleaning, the most urgent job was to sort out specimens and labels, preserving what association remained and numbering them. They would otherwise remain vulnerable to further disturbance.

MAT searched the literature, archives and collection, to prepare a detailed report on the collection's state, history and content, with an initial listing of type, figured and cited material. Although with hindsight too detailed for the immediate need for an assessment and recommendations for action, it later saved a lot of time by setting the scene for the short-term staff.



Fig. 14. Sylvia Humphrey registering specimens on display in Cheltenham Art Gallery and Museum. This case, the sole remnant of the displays set up in 1931-1932 by C. R. Mapp, was recently carefully dismantled to make way for the new galleries (AMCSW).

MAT's work at Cheltenham exemplifies many of the practical problems of pastoral work in geological collections, notably the need for a broader remit than, say, a fine art conservation service. To oversimplify somewhat, fine art collections tend to be much smaller in terms of

numbers of specimens, and have labels stuck on the back of the paintings, so that their 'rescue' can largely be a matter of restoration, revarnishing and replacement in new storage. In contrast, a geological collection, such as Cheltenham was, suffers from interlocked problems of poor curation, conservation and storage; for example, removing uncurated specimens for conservation could lead to loss of data. A dirty specimen which is not getting any dirtier can often be safely left alone but the same cannot be said about a drawerful of mixed specimens and labels!

After consultation with the AMCSW, the Museum allocated £1000 (45% grant-aided by the AMCSW) in the 1986-1987 financial year for basic documentation and sorting of the collection. A geology graduate, with enough museum experience to work largely unsupervised, was required. Miss Sylvia Humphrey was engaged to work for five weeks, mainly at Bristol City Museum, under contract to Cheltenham. Bristol had the advantages of providing adequate working facilities and help with specialist identification, using the Museum's library and staff (Figs.14-18).

The use of a Manpower Services Commission scheme was considered inappropriate in this case. Cheltenham and AMCSW certainly had to pay for the work, but they benefitted from far greater flexibility in selecting staff than is possible under MSC. In any case, it was just not possible to provide the kind of day to day supervision needed by an inexperienced worker, nor the training now demanded under the Employment Training schemes which have replaced the MSC. The many 'hidden' costs of time spent in application, supervision and general bureaucracy were also avoided.



Fig. 15. The former geological store in the annexe, showing a mixture of drawered cabinets, open drawers and fibre boxes on Dexion racking (AMCSW).



Fig. 16. Gaynor Andrews packing specimens in tissue paper and bubble-pack for transport to Bristol City Museum in 1986 (AMCSW).

Financial planning had to take into account the need to make the best use of staff time. For example, as much as possible of the first year's budget of £1,000 was spent on staff costs, and only those items required for the current year's work (or the next) were purchased. Fortunately, labels were already available from Dr Curtis' work on the collection, saving time and money. This allowed some five weeks work (the minimum realistic length of contract), with a ratio of 3:1 in labour to other costs.

Salary, national insurance and travel	£766.86
Filing cabinet, etc.	76.75
Register book, etc.	55.40
Packing material for specimens (bubble wrap and acid-free tissue)	<u>98.87</u>
Total:	£997.88

To this must be added the hidden costs of: specimen transport between Bristol and Cheltenham (absorbed by Cheltenham central budgets); a significant amount of time spent by Peter Crowther and especially Roger Clark (Curator and Assistant Curator of Geology, Bristol City Museum) in organisation and specimen identification, and some three weeks spent by me as the AMCSW Geological Officer in 'once-and-for-all' work, mainly reorganising the filing system of related documents and writing the documentation system instructions.

Funding a project in such relatively small annual increments has the potential problem of long breaks between successive workers. In any case the museum's own non-geological curators would need to know what to do from day to day, for example when removing a specimen for a temporary display. We therefore took care to ensure continuity by setting down full written procedures for documentation, loans and security, and recording all work done.

First priority was to sort out the collection and record the provenance of each specimen as far as possible. If a specimen and its label were reunited by inference, especially by sorting out the contents of a drawer, then this was recorded. Some 1,270 specimens were sorted and registered during this initial five weeks' rescue curation. As the only specimens with museum numbers were those listed by Wild (1920), a completely new manual documentation system was introduced, of numbered specimen, label and entry in a manual register, very similar in philosophy and design to that later recommended by Knell and Taylor (1989). It deviates from the commonly accepted Museum Documentation Association standard by using separate accession and registration numbers, where the accession number covers one or more specimens in a single accession, and the registration number refers to a single specimen. This system was implicit in the Bristol-style labels inherited from Dr Curtis' work; it has the advantage for a neglected collection that a specimen and its label can be registered and linked without needing to know the accession number, or using an 'artificial' number (such as 1988.1) which complicates matters when a specimen may eventually be linked to its true accession number.

For broadly similar reasons the filing system for related documents uses its own running number for history and other files rather than an accession number, and specimens are cross-linked to files by the file number. A plain comments slip was used, as this can be suitably marked for use as a removals slip or loans slip.

Indexes or detailed catalogues, whether manual or computer, were not an immediate priority, but could be added in the future if thought necessary, e.g. to conform to Museums Registration.

Sylvia Humphrey carried out a further six weeks' work in the 1987-1988 financial year, using a second grant-aided allotment of £1000. She continued the work of identifying, registering, and boxing specimens at Bristol, recording a further 1076 fossils and 647 minerals, and returning all material to Cheltenham. By then almost 3000 specimens had been documented at a nominal labour cost of 59p each! A third grant-aided allotment in the 1988-1989 financial



Fig. 17. Part of the geological store at Bristol City Museum, with Cheltenham Museum specimens in the boxes atop the Bristol racks and spread all over the table for curation in 1986 (AMCSW).



Fig. 18. Sylvia Humphrey matching specimens to their previously dissociated labels and documenting them in Bristol Museum, 1986 (AMCSW).

year involved further curatorial work at Cheltenham by Roger Vaughan, including dismantling of the last of the 1930s displays and the establishment of new storage (on 'Bruynzeel' roller-racking) for the curated specimens and sediment samples.

When basic rescue curation is completed, any future allocations will increasingly have to be spent on new storage and on remedial cleaning and conservation by a specialist conservator (such as that provided by the AMCSW's Bristol-based Geology Conservation and Advisory Service). The present storage is unsatisfactory. The specimens are packed in unsealed polythene bags in their trays or boxes, and are difficult to get at, although safe from dirt and abrasion. The question of environmental control for the few dozen sensitive specimens will also have to be dealt with.

This steady progress is heartening. The slow, regular tempo of funding - a little at a time - is much easier to squeeze into a budget than a one-off sum, and easier to keep in next year's budget, although obviously vulnerable to future cuts. It does, however, need specialist geological advice to assess each year's priorities, provide any supervision, and find or supply the skilled labour needed (but which may not be a problem if the current year's budget is spent largely on storage furniture, for example). Moreover, if other museums in the area develop the same habit of regular funding for their geological collection, this would help the local Area Museum Council or a consortium of museums to commit themselves to providing a specialist geological service.

Even when no specialists are available, the collection and its documentation need to be maintained in a secure manner, with due control

of loans and visitors, and refusal of unsupervised volunteers. The Cheltenham geological collection has been made the specific responsibility of one particular post in the Museum's staff, the Assistant Keeper of Fine Art. Its security is thus no longer so dependent on the personal interests of staff.

Another very common potential problem arises from the previous close association of the Museum and Library. A good collection of rare local geological books, reprints and periodicals was split between the Museum and the Library when the latter was transferred to the County Council in the 1974 reorganisation of local government. This did not present a problem at Cheltenham. However, cases have arisen elsewhere when the library has moved off with important reference material or has even sold it off as surplus stock despite its value to the museum.

An important justification of the work on the geological collections is that they thereby become available for use. Cheltenham is plainly limited by its lack of a permanent specialist curator but the geological display has now been removed and will be replaced in 1990 with a display on the geology, natural history and archaeology of the area, using advice from Bristol and Gloucester Museums. Any further displays will depend on future funding, and any expansion of the collection will depend on the appointment of a curator.

Nevertheless, exploiting the collection depends very much on resolving the problems caused by the fragmentation of Gloucestershire's museums into several District museums, none with a post for a specialist geological curator (ignoring temporary posts and volunteers). The only natural scientist is a biologist at Gloucester City Museum, whose interests were until very

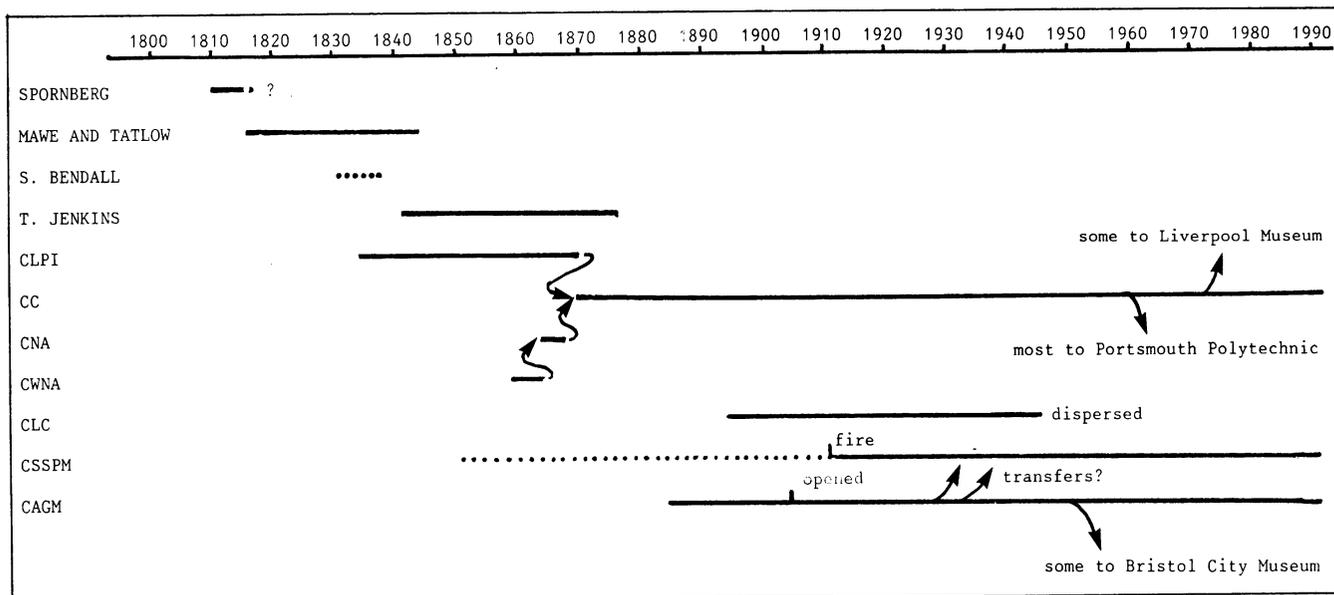


Fig. 19. Chart showing the sequence of geological collections, private and public, in Cheltenham. Abbreviations: CAGM, Cheltenham Art Gallery and Museum; CC, Cheltenham College; CLC, Cheltenham Ladies' College; CLPI, Cheltenham Literary and Philosophical Institution; CNA, Cheltenham Naturalists' Association; CSSPM, College of SS Paul and Mary, including its predecessors the College of St Paul and College of St Mary; CWNA, Cheltenham Working Naturalists' Association.

recently effectively confined to the city boundary. The museums have no formal agreements nor division of responsibilities in the natural sciences. Thus there is no formal specialist provision for geology in the museums of the large area between Dudley, Oxford, and Bristol. Yet these collections, especially Cheltenham, Gloucester, and Stroud, together constitute a major resource of Cotswold geology backed up with a wide range of other specimens. Plainly the county's museums ought to consider collaboration to provide some sort of rational service to the public. This may be nothing more than lending each other suitable display specimens. But the museums should at least consider the possibility of a joint geological curator on the model of the natural sciences in Wiltshire (Taylor 1987).

CONCLUSIONS

The sad fate of almost all geological collections in Cheltenham shows the classic story of alternate enthusiasm and neglect. In fashion-conscious places like Cheltenham and Bath these peaks and troughs do seem to have reached new extremes. Perhaps Fosbroke (1826, p.235) was merely trying to warn us when he wrote of Cheltenham: 'Small pretensions to science and literature are found in places where the inhabitants are chiefly intent upon the speculations of the day?' It is nonetheless depressing to find such long term indifference to the work of geologists in such a place as Cheltenham where the science has an obvious presence. Indeed, one writer has even gone so far as to derive the etymology of Cheltenham's name from 'the numerous fossil shells with which the whole neighbourhood of the hills around Cheltenham abounds ... We cannot take up a particle of the material brought from the hills to mend the roads without finding fossil shells.' (Hamilton 1841, p.56). What was done with these shells when they reached Cheltenham has not provided an edifying example.

Documenting the failure to maintain Cheltenham's long geological heritage has proved, as with all failures, less easy to record than any success would have been. But the scale of neglect of geological collections in Britain revealed by recent surveys shows the vital importance of documenting case histories. We have tried to present one here, so that lessons can be learnt and acted upon. See Fig.19.

We simply do not yet have enough information to say why this pattern of neglect of geological material in museums has been so often repeated in the provinces. One main reason must surely lie in the simple sway of fashion: from the giddy heights of popularity which geology and geological collecting reached in the 1830s and 1840s (so well shown in Cheltenham) there followed an inexorable, and downward, slide of disinterest - until the 1980s when a halt was called, to the credit of all involved. It would be much too simple to blame those Victorian 'market forces' which demolished the CLPI or say that educational establishments should not be allowed to maintain museums when there were clearly no alternatives then available.

One clear lesson must be the vital importance of real 'data-security' for objects in museum care. If only one such system had survived from Victorian times, how much greater the survival rate for Cheltenham would have been. The scientific and historic value of the recent rescue attempt would have been similarly much greater. It does seem that geological material is more particularly prone to both serious neglect (unlike 'valuable' art objects) and an ultimately indestructible survival (unlike entomological or other biological collections). But that many of Cheltenham's natural science collections should now be cared for far away from the place which generated them is surely to be regretted? Other, non-geological, collections have not even been considered in this study but Philip Peberdy, former curator, specifically recalled (in conversation with HST

in August 1985) the particular strengths of the former Cheltenham College Museum in both ornithology and ethnography. This one case-history shows that we must insist upon the best possible standards of documentation for collections. We also need to use our skills as communicators to highlight the importance of geology and of the curation of geological collections, both in a recreational and cultural sense.

But we can also now be optimistic. The case of Cheltenham Art Gallery and Museum shows that non-geological curators can play a part in the rescue and maintenance of a geological collection - despite the bitter experience of the last forty years which suggested that most British provincial museum curators, faced with a geological collection, either clear it away without more ado, or simply abdicate their responsibilities to ill-trained volunteers or MSC schemes. The undoubted competence of many volunteers and MSC staff has more to do with luck than the judgement of the curator - the person who is actually responsible for the collection. It has become a truism everywhere that almost the only undamaged collections are those that have been undisturbed since the 1930s! This was certainly so in the case of the relatively small amount of material which has survived in Cheltenham. Gaynor Andrews' careful transfer of the CHLGM collection, despite other distractions, was in a way no more than plain curatorial commonsense; yet it is quite exceptional amongst non-geological curators. Perhaps, with advice such as now available from Knell and Taylor (1989; itself written using Cheltenham as one exemplar and source of inspiration), more non-geological curators will be able to follow suit.

Nevertheless, the curator alone cannot be expected to make sensible decisions, let alone spend scarce money, without specialist advice. There is thus an onus on larger bodies such as Area Museum Councils to provide at least some sort of advisory service. Yet once this advice is given it is still up to the museum to provide the finance and facilities required to implement it. This was done at Cheltenham and is surely the way to save more such collections.

Acknowledgements. During HST's trail after Cheltenham geological material, lasting more than twenty years, innumerable debts have been incurred to librarians, curators and record officers: in particular, at Cheltenham, to Gaynor Andrews, Roger Beacham and Steven and Maggie Blake. The complex history of Cheltenham College collections was unravelled with the help of D. A. Atherton (bursar), Martin Jones (archivist), J. C. Ralphs (librarian), Chris Rouan and Hugh Wright in Cheltenham; Philip Phillips and Peter Morgan in Liverpool; and Mike Barker in Portsmouth. Reminiscences from Philip Peberdy and the late F. B. A. Welch are gratefully acknowledged. David Dartnall (Gloucester Museum) and Dennis Phillips (Natural History Museum, London) also assisted. Vital source material was provided by David Allen (Winchester), Miss M. E. Arnold (Northampton), Peter Buckman (Oxford), Clive Hughes (Haverfordwest), Dr W. F. T. Tatlow (Montreal, Canada), Tom Sharpe (Cardiff), John Thackray (London), Malcolm Thomas (London), Tom Vallance

(Sydney, Australia), Miss R. Watson (Northampton) and Francis Witts (Upper Slaughter).

MAT's contribution is based on work carried out while working as Geological Officer for the Area Museum Council for the South West (1983-1987). Sam Hunt (Executive Director, AMCSW) and George Breeze (Director, Cheltenham Art Gallery and Museums) kindly gave their permission to publish, but any opinions expressed by the authors are not necessarily the policy of either institution. MAT is also grateful to Joe Angseesing, Roger Clark, Michael Crane, Peter Crowther, Micky Curtis, Stephen Locke, and Michael Simms. Finally we wish to pay tribute to Gaynor Andrews and Sylvia Humphrey for their hard work and enthusiasm.

REFERENCES

- Allen, D. E. 1976. The naturalist in Britain. Penguin Books, Harmondsworth.
- 1987. The botanists. St Paul's Bibliographies, Winchester.
- Anand, A. M. 1971. Cavalry surgeon. The recollections of Deputy Surgeon-General John Henry Sylvester FGS Bombay Army. Macmillan, London.
- Anon. 1837. The Cheltenham Literary and Philosophical Institution. The Mirror of Literature, Amusement and Instruction, 29, 185-186.
- 1839. List of Members, February 1839. Proc. bot. Soc. Lond. 1, 99-103.
- 1857. Reports of the local committees on the meeting of the British Association in Cheltenham in August 1856. Davies, Cheltenham.
- 1874. Excursion to Cheltenham. Geol. Mag., Dec. 2, 1, 523-528.
- 1888. [Obituary of Sir W. V. Guise.] Trans. Bristol Glos. arch. Soc. 12, 172-175.
- 1908. Rev. Thomas Wilkinson Norwood, M.A., F.G.S. Geol. Mag., Dec. 5, 5, 191-192.
- 1930. Ordinary winter meeting, November 19 1929. Proc. Cotteswold Nat. Fld Club, 23, 203.
- 1940. Obituary, Charles Irving Gardiner. Ibid, 27, 114-115, pl.3.
- Argyll, Duke of. 1873. Obituary of Thomas Bloxam. Q. Jl geol. Soc. Lond. 29, xl.
- Arkell, W. J. 1951-1959. A monograph of English Bathonian Ammonites. Palaeontogr. Soc. (Monogr.) viii + 264pp., 33pls.
- Ashton, O. 1983. Clerical control and radical responses in Cheltenham Spa 1838-1848. Midland Hist. 8, 121-147.
- Austin, R. 1928. Catalogue of the Gloucestershire Collection. Osborne, Gloucester.
- Averley, G. 1986. The 'Social Chemists'. English Chemical Societies in the eighteenth and early nineteenth century. Ambix, 33, 99-128.
- Baker, T. B. L. 1853. Address read to the Cotteswold Naturalists' Club Feb. 10 1852. Proc. Cotteswold Nat. Fld Club, 1, 101-114.
- 1860. Address read to the CNFC, January 1856. Ibid, 2, i-v.
- Bathurst, C. and Kinch, E. (eds.). 1898. Register of the staff and students of the Royal Agricultural College 1844-1897. Harmer, Cirencester.

- Beaver, S. 1951. The development of the Northamptonshire iron industry 1851-1930, pp. 33-58. In Stamp, L. D. and Wooldridge, S. W. (eds.). London essays in geography. Longmans, Green and Co., London.
- Bell, A. 1981. Pleasure Town Cheltenham 1830-1860. Sadler, Chalfont St Giles.
- Binfield, W. R. and Binfield, H. 1854. On the occurrence of fossil insects in the Wealden strata of the Sussex Coast. Q. Jl geol. Soc. Lond. 10, 171-176.
- Bishop, M. J. 1984. New biographical data on Henry Clifton Sorby (1826-1908). Earth Sci. Hist. 3, 69-81.
- Blake, S. 1982. George Rowe, artist and lithographer, 1796-1864. The catalogue of an exhibition. Sutton, Cheltenham.
- 1984a. Views of Cheltenham 1786-1860. Cheltenham Art Gallery and Museums, Cheltenham.
- 1984b. The building of the Montpellier Shops: an outline chronology. J. Cheltenham Loc. Hist. Soc. 2, 15-20.
- and Beacham, R. 1982. The Book of Cheltenham. Barracuda, Buckingham.
- Boisragon, H. C. 1833. The importance and advantages of philosophical enquiry. Davies, Cheltenham.
- Boyle, A. 1967. An index to the Annuals 1820-1850. Boyle, Worcester.
- Brears, P. C. D. 1984. Temples of the Muses: the Yorkshire Philosophical Museums 1820-50. Museums J. 84, 3-20.
- Brock, W. H. and Macleod, R. 1976. The scientists declaration: reflexions on science and belief in the wake of Essays and Reviews 1864-5. Br. J. Hist. Sci. 9, 39-66.
- Brodie, P. B. 1850. On certain beds in the Inferior Oolite near Cheltenham. Q. Jl geol. Soc. Lond. 6, 239-249.
- 1858. Contributions to the geology of Gloucestershire. Geologist, 20, 81-88.
- [Buckman, J.] 1842. Our triangle: the geology, archaeology, botany of the most picturesque and interesting spots of Cheltenham and its neighbourhood. Rawlings and Lake, Cheltenham.
- Buckman, J. 1843a. A geological chart of the Oolitic strata of the Cotswold Hills and Lias in the Vale of Gloucester. Davies, Cheltenham.
- 1843b. List of the fossils found in the neighbourhood of Cheltenham. Geologist, 2, 104-111.
- 1850. On some fossil plants of the Lower Lias. Q. Jl Geol. Soc. Lond. 6, 413-418.
- Buckman, S. S. 1898. Some recent excavations near Cheltenham. Cheltenham Examiner, 4 May 1898.
- 1899. Report of the collection of Jurassic fossils in Cheltenham College Museum. Rep. Cheltenham Coll. nat. Hist. Soc. for 1898, [10], 45-55.
- 1903. Two Toarcian ammonites. Q. Jl geol. Soc. Lond. 59, 459-464, pls. 27, 28.
- 1906. Bibliographical notes on Murchison's Geology of Cheltenham. Norman, Sawyer and Co., Cheltenham.
- Burke, B. (ed.) 1921. Landed Gentry of Great Britain (13th edition). Burke, London.
- Butt, W. 1909. Obituary of Mrs Hutton. Proc. Cotteswold Nat. Fld Club, 16, 198.
- Cardew, G. A. 1920. Echoes and reminiscences of medical practitioners in Cheltenham. Burrow, Cheltenham.
- Chalmers-Hunt, J. M. 1976. Natural history auctions 1700-1972: register of sales in the British Isles. Sotheby Parke Bernet, London.
- Channon, P. J. 1950. Mainly geological. Proc. Cotteswold Nat. Fld Club, 30, 62-69.
- Clarke, A. K. 1953. A history of the Cheltenham Ladies' College. Faber and Faber, London.
- Cleevly, R. J. 1983. World palaeontological collections. British Museum (Natural History) and Mansell, London.
- Clinker, C. R. 1964. History of the Great Western Railway. Volume 1. 1833-1863 (2nd edition). Allan, London.
- Cocks, L. R. M. 1978. A review of British Lower Palaeozoic brachiopods, including a synoptic revision of Davidson's monograph. Palaeontogr. Soc. (Monogr.), ii + 256 pp.
- Colchester-Wemyss, M. W. 1898. Annual address to the Cotteswold Naturalists' Field Club ... Proc. Cotteswold Nat. Fld Club, 12, 197-208.
- Coles, H. 1853. On the skin of the Ichthyosaurus. Q. Jl geol. Soc. Lond. 9, 79-81, pl.5.
- Comfield, R. 1826. Observations on the occultation of Jupiter on 5 April 1824. Mem. astronom. Soc. 2, 89.
- and Wallis, J. 1826. Observations on the occultation of Saturn on 30 October 1825. Ibid. 457-458.
- Cope, J. C. W., Getty, T. A., Howarth, M. K., Morton, N. and Torrens, H. S. 1980. A correlation of Jurassic rocks in the British Isles. Part One: Introduction and Lower Jurassic. Spec. Rep. geol. Soc. Lond. 14, 1-73.
- Copeland, G. F. 1837. On the fossil zoology of Cheltenham. Cheltenham Annuaire, 1837, 33-41.
- Cox, L. R. 1942. New light on William Smith and his work. Proc. Yorks. geol. Soc. 25, 1-99.
- and Arkell, W. J. 1950. A survey of the Mollusca of the British Great Oolite Series, primarily a nomenclatorial revision of the monographs by Morris and Lycett (1851-55), Lycett (1863) and Blake (1905-1907). Part 2. Palaeontogr. Soc. (Monogr.), xiv-xxiv, 49-105.
- Crane, M. D. 1985. A biographical dictionary of the curatorial staff of the [Bristol] Institution. City of Bristol Museum and Art Gallery [unpublished typescript].
- Crick, G. C. 1902. Note on Nautilus robustus Foord and Crick. Geol. Mag., Dec. 4, 9, 342-346.
- 1920. On some dibranchiate Cephalopoda from the Upper Lias of Gloucestershire. Proc. Cotteswold Nat. Fld Club, 20, 249-256, pls. A, B.
- Davidson, T. 1878. A monograph of the British fossil Brachiopoda. Supplement. Vol.4. Part 2, number 2. Palaeontogr. Soc. (Monogr.), pp.145-242, pls. xvii-xxix.
- 1883-1884. A monograph of the British fossil Brachiopoda. Supplement. Vol. V. Parts II, III. Silurian Supplement. Ibid. pp.135-476, pls. viii-xxi.
- Davies, H. 1834. Stranger's guide through Cheltenham (2nd edition). Davies, Cheltenham.
- 1837. The Cheltenham Literary and Philosophical Institution with notices of several previous attempts to establish similar societies in Cheltenham. Cheltenham Annuaire, 1837, 17-32.
- 1843. Stranger's guide through Cheltenham (3rd edition). Davies, Cheltenham.

- Eliot, W. 1871. List of Field Clubs, being a continuation of the Address delivered December 1870. Trans. bot. Soc. Edinb. 11, 193-255.
- [Etheridge, R.] ?1884. Printed leaflet offering the fossil collection of the late Thomas Wright FRS of Cheltenham for sale. [London, no publisher named], 3 pp. [copy in British Library Add. MSS 41495, ff. 347-348.]
- Fletcher, T. B. 1946. The Cotteswold Naturalists' Field Club 1846-1946. Cotteswold Naturalists' Field Club, Gloucester.
- Flett, J. S. 1937. The first hundred years of the Geological Survey of Great Britain. HMSO, London.
- Ford, T. D. (editor of reprint). 1973. Gem of the Peak by William Adam (1851). Moorland, Hartington.
- Fosbroke, T. D. 1826. A picturesque and topographical account of Cheltenham and its vicinity. Harper, Cheltenham.
- Foster, J. 1887-1888. Alumni Oxonienses 1715-1886. 4 vols. Parker, Oxford.
- Foster, R. A. 1984. The larger provincial museums and art galleries. Pp. 66-75. In Thompson, J. M. A. and Prince, D. R. (eds.). Manual of curatorship. Museums Association and Butterworths, London.
- Gardiner, C. I. 1914. An introduction to geology. Bell, London.
- _____ 1923. Geology. Murray, London.
- _____ and Herdman, D. W. 1935. Obituary. Joseph William Gray, FGS. Proc. Cotteswold Nat. Fld Club, 25, 315.
- Geikie, A. 1875. Life of Sir Roderick I. Murchison. 2 vols. Murray, London.
- Gill, L. V. 1903. The Naturalist's Directory, 1902-1903 (Seventh issue). Gill, London.
- [Glover, R.] Contem Ignotus. 1884. The golden decade of a favored town ... from 1843-1853. Stock, London.
- Goding, J. 1863. Norman's History of Cheltenham. Longman, London.
- Goff, J. 1975. The Camfield family of Northamptonshire. Privately published, Spratton. [Northamptonshire Record Office pamphlet 1222.]
- Gray, J. W. 1927. Notes on a collection of specimens from superficial deposits, arranged by J. W. Gray, F. G. S. [abstract]. Proc. Cotteswold Nat. Fld Club, 23, 109-114.
- Greenwood, T. 1888. Museums and Art Galleries. Simpkin, Marshall and Co., London.
- Griffith, S. Y. 1826. New historical description of Cheltenham. Griffith, Cheltenham.
- Guise, W. V. 1865. [Report of field trip to Alderton and Dumbleton, and a visit to Miss Holland's collection at Dumbleton House.] Proc. Cotteswold Nat. Fld Club, 3, 58-60.
- _____ 1877. Obituary of D. W. Nash. Ibid. 6, 280-281.
- Hamilton, A. H. [1841]. The visitors new condensed guide to Cheltenham (2nd edition). Rees, Cheltenham.
- Hart, G. 1965. A history of Cheltenham. University Press, Leicester.
- Herdman, D. W. 1931. Catalogue of the paintings, etchings and sculptures in the Cheltenham Art Gallery (2nd edition). Alcuin Press, Campden.
- Hibbert, T. and Richardson, L. 1913. The water supply of Cirencester, Gloucestershire. Proc. Cotteswold Nat. Fld Club, 18, 175-184.
- Hunter, A. A. 1911. Cheltenham College Register 1841-1910. Bell, London.
- Huntford, R. 1979. Scott and Amundsen. Hodder and Stoughton, London.
- _____ 1980. Scott and Amundsen. Encounter, 55, 85-87.
- Hutchins, J. 1863. The history and antiquities of Dorset. Vol. 2. Nichols, London.
- J_____, N. R. 1947. [Obituary, Captain R. P. Wild]. Q. Jl geol. Soc. Lond. 103, lxiii-lxiv.
- Jackson, J. F. 1937. Schedule of cave finds [part]. Caves and Caving, 1, 48-51.
- Jardine, W. 1858. Memoirs of Hugh Edwin Strickland with a selection from his printed and other scientific papers. Van Voorst, London.
- Kamm, J. 1958. How different from us. Bodley Head, London.
- Kinns, S. 1889. Moses and geology, or the harmony of the Bible with science (12th thousand). Cassell, London.
- Knell, S. J. and Taylor, M. A. 1989. Geology and the local museum. HMSO, London.
- Kummel, B. 1956. Post-Triassic nautiloid genera. Bull. Mus. comp. Zool. Harv. 114, 319-494, 28 pls.
- Lewis, G. D. 1984a. Collections, collectors and museums in Britain to 1920. Pp. 23-27. In Thompson, J. M. A. and Prince, D. R. (eds.). Manual of curatorship. Museums Association and Butterworths, London.
- _____ 1984b. Museums in Britain: 1920 to the present day. Pp. 38-53. Ibid.
- Lloyd, O. 1840. Natural history etc. Tewkesbury Yearly Register and Magazine, for 1830-1839, 1, 443-444.
- Lucy, W. C. 1888. The origin of the Cotteswold Club and an epitome of its proceedings from its formation to May, 1887. John Bellows, Gloucester.
- Lycett, J. 1857. The Cotteswold Hills. Hand-book introductory to their geology and palaeontology. Piper, Stephenson and Spence, London.
- Lydekker, R. 1899. Catalogue of the fossil Reptilia and Amphibia in the British Museum (Natural History), Part 2. British Museum (Natural History), London.
- McKechie, S. 1971. Jacob Spornberg, eighteenth century artist from Finland. Tabard Press, London.
- Matheson, C. 1964. George Brettingham Sowerby the first and his correspondents. J. Soc. Bibliophy nat. Hist. 4, 214-225.
- Mawe, J. 1832. Wodarch's introduction to the study of conchology (4th edition). Longman, London.
- Meade, L. T. 1895. Girls schools of today 1. Cheltenham College. Strand Mag. 9, 283-288.
- Moore, D. T. 1981. Some background to the Antarctic geological collections of Captain R. F. Scott and Sir E. H. Shackleton. Arch. nat. Hist. 10, 359-360.
- Morgan, M. C. 1968. Cheltenham College. The first hundred years. Sadler, Chalfont St Giles.
- Morris, J. 1853. On some sections in the Oolitic District of Lincolnshire. Q. Jl geol. Soc. Lond. 9, 317-344.
- _____ and Lycett, J. 1851-1855. A monograph of the Mollusca from the Great Oolite, chiefly from Minchinhampton and the coast of Yorkshire. Palaeontogr. Soc. (Monogr.), viii + 130, 148 pp., 15 + 15 pls.
- Moxon, C. 1841. Illustrations of the characteristic fossils of British strata. Baillière, London.

- Murchison, R. I. 1834. Outline of the geology of the neighbourhood of Cheltenham. Davies, Cheltenham.
- Murray, D. 1904. Museums, their history and their use. Vol. 1. Maclehose, Glasgow.
- Nash, D. W. 1837a. On the geology of Cheltenham. Cheltenham Mag. 1, 289-292, 353-357.
- _____ 1837b. Medical topography and statistics of Cheltenham [including a geological map]. Trans. Prov. med. surg. Ass. 6, 251-298.
- Owen, R. 1840. Report on British fossil reptiles, Part 1. Rep. Br. Ass. Advmt Sci. for 1839, 43-126.
- Phillips, D. 1977. Catalogue of the type and figured specimens of Mesozoic Ammonoidea in the British Museum (Natural History). British Museum (Natural History), London.
- _____ 1987. Additions to the catalogue of type and figured fossil Cephalopoda in the British Museum (Natural History). Ibid.
- Phillips, J. 1865-1909. A monograph of British Belemnitidae: Jurassic. Palaeontogr. Soc. (Monogr.), 128pp., 36 pls.
- Pierson, C. 1858. Private geological collections. Geologist, 1, 309.
- Pigg, C. H. 1953. Cheltenham College Register, 1919-1951. The College, Cheltenham.
- Pigot, J. 1822. Directory for Gloucestershire, 1822-3. Pigot, London.
- Pine, L. G. 1956. Burke's Peerage, Baronetage and Knightage (101st edition). Burke, London.
- Renton, E. L. and Renton, E. L. 1929. Records of Guilsborough. T. B. Hart, Kettering.
- Reynolds, S. H. 1941. Obituary of C. I. Gardiner. Q. Jl geol. Soc. Lond. 97, lxxxvi - lxxxvii.
- Richardson, G. F. 1846. Geology for beginners (3rd edition). Bohn, London.
- _____ 1851. An introduction to geology (new edition revised and enlarged by T. Wright). Bohn, London.
- Richardson, L. 1904. A handbook to the geology of Cheltenham and neighbourhood. Norman Sawyer and Co., Cheltenham. [Reprinted and revised edition 1972. Minet, Chicheley.]
- _____ 1910a. On two deep well-sinkings at Leckhampton. Geol. Mag., Dec. 5, 7, 101-103.
- _____ 1910b. The Inferior Oolite and contiguous deposits of the South Cotteswolds. Proc. Cotteswold Nat. Fld Club, 17, 63-136, pls. 15-21.
- _____ 1913. A deep boring at Kemble. Ibid. 18, 185-189.
- _____ 1915a. Excursion to Tetbury Waterworks. Saturday, September 25th, 1915. Ibid. 19, 25-28, pl. 14.
- _____ 1915b. A deep boring at the Waterworks, Tetbury, Gloucestershire. Ibid. 19, 57-66.
- _____ 1915c. A deep boring at Shipton Moyne, near Tetbury, Gloucestershire. Ibid. 19, 49-55.
- _____ 1919. Another deep boring at Shipton Moyne, near Tetbury, Gloucestershire. Ibid. 20, 151-159.
- _____ 1929. The country around Moreton-in-Marsh. Mem. geol. Surv. England and Wales.
- _____ 1930. Wells and springs of Gloucestershire. Ibid.
- _____ and Thacker, A. G. 1920. On the stratigraphical and geographical distribution of the sponges of the Inferior Oolite of the West of England. Proc. Geol. Ass. 31, 161-186, pls. 12, 13.
- _____ and Upton, C. 1913. Some Inferior Oolite Brachiopoda. Proc. Cotteswold Nat. Fld Club, 18, 47-58.
- _____ and Walters, R. C. S. 1922. Lower Lias section at Hayden, near Cheltenham. Ibid. 21, 167-169, pl. 8.
- Riddelsdell, H. J. and Austin, R. 1919. Buckman's 'Botany of the environs of Cheltenham' 1844. Ibid. 20, 162-165.
- _____ et al. 1948. Flora of Gloucestershire. Cotteswolds Naturalists' Field Club, Cheltenham.
- Rolfe, W. D. I., Milner, A.C. and Hay, F. G. 1988. The price of fossils. Pp. 139-171. In Crowther, P. R. and Wimbleton, W. A. (eds.). The use and conservation of geological sites. Spec. Pap. Palaeont. 40, 1-200.
- Rolt, L. T. C. 1978. George and Robert Stephenson. The railway revolution. Penguin, Harmondsworth.
- [Rowe, G.] 1845. Rowe's Illustrated Cheltenham guide. Rowe, Cheltenham.
- Royal Society. 1867. Catalogue of scientific papers 1800-1863, vol. 1. HMSO, London.
- Sanders, E.M. 1914. La région de Bristol. Thèses présentées à la Faculté des Sciences de Paris. Jouve, Paris.
- Saunders, P. 1982. Edward Jenner: the Cheltenham years 1795-1823. New England University Press, Hanover, New Hampshire.
- Savage, R. J. G. 1963. The Witts Collection of Stonesfield Slate fossils. Proc. Cotteswold Nat. Fld Club, 33, 177-182.
- Sayer, W. 1974. A selection of drawings of brachiopods from the collection of Linsdall Richardson at Cheltenham Museum and Charles Upton at Gloucester Museum ... Unpublished manuscript; copies in Geology Section of Bristol City Museums and Art Gallery, and Cheltenham Art Galleries and Museum.
- Skirving, E. S. 1928. Cheltenham College Register, 1841-1927. The College, Cheltenham.
- Smith, W. 1817. Stratigraphical system of organised fossils. Williams, London.
- Sowerby, J. 1813. Mineral conchology of Great Britain. Vol. 1, part 3. Meredith, London.
- Spamer, E., Bogan, A. E. and Torrens, H. S. 1989. Rediscovery of the Etheldred Benett collection of fossils, mostly from Jurassic-Cretaceous strata of Wiltshire, England. Proc. Acad. nat. Sci. Philad. 141, 115-180.
- Spath, L. F. 1927-1933. Revision of the Jurassic cephalopod fauna of Kacch (Cutch). Mem. geol. Surv. India Palaeont. indica, NS, 9 (Mem. 2), x + 945 pp., 133 pls.
- _____ 1938. A catalogue of the ammonites of the Liassic family Liparoceratidae. British Museum (Natural History), London.
- Steward, D. 1986. Cheltenham Art Gallery and Museum. Geol. Curator, 4, 520.
- Strickland, H. E. and Buckman, J. 1844. Outline of the geology of the neighbourhood of Cheltenham (Revised edition of R. I. Murchison 1834). Davies, Cheltenham and London. [New issue in 1845 with reverse authorship.]
- Symonds, W. S. 1880. Meeting at King Arthur's Cave, Whitchurch. Trans. Woolhope Nat. Fld Club, for 1874-1876, 15-31.

- Tatlow, J. 1821. Memoirs of John Tatlow written by himself 1780-1821. Unpublished manuscript in possession of Dr W. F. T. Tatlow, Montreal, Canada.
- Taylor, M. A. 1987. A strategy to safeguard the geological collections of the smaller museum. Geol. Curator, 4, 413-420.
- Torrens, H. S. 1976. Charles Callaway (1838-1915). Newsl. geol. Curators Grp, 1, 299.
- 1978a. The Sherborne School Museum and the early collections and publications of the Dorset Natural History and Antiquarian Field Club. Proc. Dorset nat. Hist. archaeol. Soc. 98, 32-42.
- 1978b. Collections and information found. 52. HOLLAND, Harriet Sophia (c. 1835-1908) later Mrs HUTTON mother of 52a. HUTTON, Harriet Mary (1873-1937). Newsl. geol. Curators Grp, 2, 128-129.
- 1979a. Upton, Charles (?-1967). Ibid. 2, 189.
- 1979b. Geological communication in the Bath area in the last half of the eighteenth century. Pp. 215-247. In Jordanova, L. J. and Porter, R. S. (eds.). Images of the Earth. British Society for the History of Science Monograph 1, Chalfont St Giles.
- 1982. The geology of Cirencester and District. Pp. 72-78. In Wachter, J. and McWhirr, A. (eds.). Early Roman occupation at Cirencester. Cirencester Excavations Committee, Corinium Museum, Cirencester.
- 1987. John Gilbert (1812-1845) the Australian naturalist and explorer. New light on his work in England. Arch. nat. Hist. 14, 211-219.
- 1988a. What price the advancement of science? James Buckman as a professional scientist from 1846 to 1863. Unpublished paper read to the 150th meeting of the British Association for the Advancement of Science, Oxford 1988.
- 1988b. Lost and found. 14. Dr Charles Calloway (1838-1915). Geol. Curator, 5, 29.
- In press. Under Royal Patronage: the early work of John Mawe (1766-1829) in geology and the background to his travels in Brazil in 1807-10. Proceedings Primo Coloquio Brasileiro de Historia e Teoria do Conhecimento Geologico - Campinas 1988.
- and Cooper, J. A. 1986. Uncurated curators: George Fleming Richardson (1796-1848). Geol. Curator, 4, 249-272.
- Trueman, A. E. 1922. Notes on the ammonites [collected by Richardson and Walters 1922]. Proc. Cotteswold Nat. Fld Club, 21, 170-174, pl. 9.
- Venn, J. A. 1940-1954. Alumni Cantabrigienses. Part II. 1752-1900. 6 vols. Cambridge University Press, Cambridge.
- Verey, D. 1978. The diary of a Cotswold Parson: Reverend E. E. Witts 1783-1854. Sutton, Dursley.
- Ward, J. 1893. Notes on archaeology in provincial museums. No. XXVIII. The College Museum, Cheltenham. Antiquary, 28, 57-60.
- Watson, C. M. 1909. The life of Major General Sir Charles William Wilson. Murray, London.
- Wethered, E. B. 1901. Obituary of Frederick Smithe. Proc. Cotteswold Nat. Fld Club, 14, 2-3.
- Wild, R. P. 1920. Notes on the rock specimens in the Museum. Museum Publication of Cheltenham Art Gallery and Museum, 1, 1-49.
- Wilson, E. 1972. Diary of the 'Terra Nova' Expedition to the Antarctic 1910-1912. Blandford Press, London.
- Witts, F. E. 1842. [Manuscript diary owned by Mr Francis Witts of Upper Slaughter.]
- Woods, H. 1924-1931. A monograph on the fossil macrurous Crustacea of England. Palaeontogr. Soc. (Monogr.), 122 pp., 27 pls.
- Woodward, A. S. 1911. Euthynotus: a fossil fish from the Upper Lias of Dumbleton, Gloucestershire. Proc. Cheltenham nat. Sci. Soc. (2) 1, 322-323.
- Woodward, H. B. 1894. The Jurassic rocks of Britain. Vol. 4. HMSO, London.
- 1911. On a new species of Eryon from the Upper Lias of Dumbleton Hill. Geol. Mag., Dec. 5, 8, 307-311.
- Wright, T. 1853. On the Cidaridae of the Oolites. Proc. Cotteswold Nat. Fld Club, 1, 134-173.
- 1856. On the palaeontological and stratigraphical relations of the so-called 'Sands of the Inferior Oolite'. Q. Jl geol. Soc. Lond. 12, 292-325.
- 1860. On the zone of Avicula contorta and the Lower Lias of the south of England. Ibid. 16, 374-411.
- 1865. Report on Miss Holland's collection of Lias fossils. Proc. Cotteswold Nat. Fld Club, 3, 153-156.
- Young, G. and Bird, J. 1828. A geological survey of the Yorkshire coast (2nd edition). Kirby, Whitby.
- Young, W. 1980. On the debunking of Captain Scott. Endeavour, 54, 8-19.

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

and

Michael A. Taylor
Earth Sciences Section
Leicestershire Museums, Arts and Records Service
96 New Walk, Leicester LE1 6TD

Typescript received 25 August 1989
Revised typescript received 25 November 1989

APPENDIX 1. Published material formerly in the Cheltenham College Museum

Apart from the material mentioned by S. S. Buckman (1899) the following four specimens are known to have had type, figured or cited status.

A. Figured syntype of Procymatoceras subtruncatum (Morris and Lycett)

A single specimen of a nautiloid from the Great Oolite of Minchinhampton, Gloucestershire, was illustrated as the new species Nautilus subtruncatus by Morris and Lycett (1851), no repository being given. S. S. Buckman (1899) found it in the collection of Cheltenham College (see also Richardson 1904, p.155). In 1942 it was transferred to Bristol City Museum (now BRSMG Cb2968) for safekeeping by Mr S. D. Scott, the then acting curator of the College Museum, on behalf of the Bursar of the College (BRSMG Historical File 3119). Nevertheless, Cox and Arkell (1950) listed it as still at Cheltenham College. Kummel (1956), in a systematic revision of the group, wrote (p.428) 'the genotype described and figured by Morris and Lycett does not seem to be available' and he illustrated instead a topotype (BMNH 21275), this figured syntype then being effectively lost.

Syntype of Nautilus subtruncatus Morris and Lycett, 1851, p.10, pl.1, figs. 2, 2a.
Genotype of Procymatoceras Spath, 1927, pp.21, 25.

Cited by Cox and Arkell (1950, p.91, caption to Morris and Lycett, pl.1, figs. 2, 2a) as Procymatoceras subtruncatum.

B. Tulites cadus S. S. Buckman

'C. I. Gardiner' coll. (not so, see main text), Cheltenham College Museum. Topotype, thus cited and figured by Arkell (1951-1959, pp.91-93, pl.XII, fig. 8a, b). Curated by P. J. Channon

in 1950 as no.433 in 'C. I. Gardiner's collection, Nautilus, Jurassic'. Rescued by HST from the College's teaching collection in 1970, and passed to BM(NH) in April 1981, where it is registered as C82796.

C. Oppelia (Oxycerites) waterhousei (Morris and Lycett)

'C. I. Gardner' [sic] coll. (not so, see main text), Cheltenham College Museum no.146, thus cited by Arkell (1951-1959, p.66). Curated by P. J. Channon in 1950 as no.431 in 'C. I. Gardiner's collection, Oppelia waterhousei (Morris and Lycett)'; its old registration number was 146. Passed to Department of Geology, Portsmouth Polytechnic, and then in November 1984 per HST to the BM(NH), where it is registered C89608.

D. Nautilus robustus Foord and Crick

Crick (1902) cited two specimens of Nautilus robustus from the College Museum, registration numbers 900 and 901. 900 was labelled by S. S. Buckman 'Marlstone. Loc. unknown; but probably near Cheltenham and possibly Alderton Hill'. Buckman thought it might have been that cited by Strickland and J. Buckman (1844, p.40) as N. obesus. 901 had an original label 'Nautilus, Marlstone, Gretton' by James Buckman. One of these specimens may be that cited in the Channon MSS catalogue of 1950 as new no. 639 Nautilus robustus [N.B.] from Whitby [sic] but it was not in the Portsmouth Polytechnic collection in 1971 (T. L. M. Smith, chief Acting Curator in litt., 12 July 1971). Both specimens may have to be considered lost. New no. 640, which is labelled Stroud, seems to bear an old number of 912 and while a Liassic nautiloid cannot be one of those cited above.

APPENDIX 2. Bibliography of the Reports of the Cheltenham College Natural History Society

The holdings of the following libraries are listed: CC, Cheltenham College Biology Department; Bodleian Library, University of Oxford; Glos, Gloucester Public Library; BM(NH), British Museum (Natural History) Library; and BL, British Library. Only one issue, number 1, seems to be unique but none of these five libraries has a complete set (and Cheltenham Public Library has no copies of any).

	<u>For year</u>	<u>Published</u>	<u>Pages</u>	<u>Holding institutions</u>
1.	1870	1871	36	CC
2.	1889	1890	32	BL, Bodleian, CC (notes the revival of the former society on 15.2.1889)
3.	1890	1891	39	Bodleian, CC
4.	1891	1892	47	BL, Bodleian, CC, Glos
5.	1892	1893	49	Bodleian, Glos
6.	1893-4	1895	55	CC, Glos
7.	1895	[1896]	34	BM(NH), CC, Glos
8.	1896	1897	57	BM(NH), CC, Glos
9.	1897	1898	51	BM(NH), CC, Glos
10.	1898	1899	59	BM(NH), CC, Glos
11.	1899	1900	67	BM(NH), CC, Glos
12.	1900	1901	54	CC, Glos
13.	1901	[1902]	47	BM(NH), CC, Glos
14.	1902	[1903]	54	BM(NH), CC, Glos

15.	1903	[1904]	53	CC, Glos
16.	1904	[1905]	47	BM(NH), CC, Glos
17.	1905	[1906]	45	BM(NH), CC, Glos
18.	1906	[1907]	47	BM(NH), CC, Glos
19.	1907	[1908]	48	BM(NH), CC, Glos
20.	1908	[1909]	51	BM(NH), CC, Glos
21.	1909	[1910]	58	BM(NH), CC, Glos
22.	1910	[1911]	44	BM(NH), Glos
23.	1911	[1912]	44	BM(NH), Glos
24.	1912	[1913]	44	BM(NH), CC, Glos
25.	1913	[1914]	43	BM(NH), CC, Glos
26.	1914	[?1915]	32	BM(NH), CC, Glos

The BM(NH) set has a note from C. I. Gardiner (in litt. 14.10.1923) stating no reports were issued for 1915 to 1919.

27.	1920	[1921]	32	BM(NH), CC, Glos
28.	1921	[1922]	24	BM(NH), CC
29.	1922	[1923]	24	BM(NH), CC, Glos
30.	1923	[1924]	36	BM(NH), CC, Glos
31.	1924	[1925]	36	BM(NH), CC, Glos
32.	1925	[1926]	35	BM(NH), CC, Glos
33.	1926	[1927]	35	BM(NH), CC, Glos
34.	1927	[1928]	63	BM(NH), CC, Glos
35.	1928	[1929]	36	BM(NH), CC, Glos
36.	1929	[?1930]	36	BM(NH), CC
37.	1930	[?1931]	48	BM(NH), CC
38.	1931	[?1932]	47	BM(NH), CC, Glos
39.	1932	[?1933]	47	BM(NH), CC
40.	1933	[?1934]	40	BM(NH), CC
41.	1934	[1935]	40	BM(NH), CC
42.	1935	[?1936]	23	BM(NH), CC
43.	1936	[?1937]	16	BM(NH), CC
44.	1937	[?1938]	19	BM(NH), CC
45.	1938	[?1939]	24	BM(NH), CC

The BM(NH) set has a note from C. H. Boutflower (in litt. 23.3.1941) stating no report was issued for 1939.

46.	1940	[?1941]	12	BM(NH)
47.	1941	[?1942]	8	BM(NH)

No reports were issued for 1942 to 1945 (see 48, p.2).

48.	1946	[?1947]	11	BM(NH), CC, Glos
49.	1947	[?1948]	16	BM(NH), CC, Glos
50.	1948	[?1949]	16	BM(NH), CC, Glos
51.	1949	[?1950]	27	BM(NH), CC, Glos
52.	1950	[?1951]	20	BM(NH), CC, Glos
53.	1951	[?1952]	22	BM(NH), CC
54.	1952	[?1953]	11	BM(NH), CC

BOOK REVIEWS

Ellenberger, F. 1988. Histoire de la Géologie (Des Anciens à la première moitié du XVII^e siècle), Tome 1. Technique et Documentation - Lavoisier, Paris, viii + 352 pp. ISBN 2-85206-457-X. Price 165 French francs.

One need not know François Ellenberger in person to realise the enormous and continuous effort which has gone into his major work of synthesis on the History of Geology reviewed here. The contents speak for themselves and certainly surpass the author's main aim - to contribute to an improvement in the teaching of Geology, through the introduction of a historical approach. This is also in perfect accord with the aim of the French series 'Petite Collection d'Histoire des Sciences' of which this book forms a part.

The author warns in his Introduction (p. 5) that even his title may cause astonishment or criticism, for how can one talk of Greek and Roman 'Geology' without being anachronistic? Apart from Professor Ellenberger's care in always referring here to 'Proto-Geology', this initial contradiction is further overcome by his own approach. He has chosen to discuss the history of the evolution of Ideas and Problems that enlivened the debate about the Earth, over the almost two thousand years that preceded the birth, in a proper sense, of what we now call Geology. From this point of view, despite 'externalist and internalist' debates having become outmoded by recent historiography, Ellenberger's work can be characterised as excellent 'internalist' history. Without imposing restrictive foci or unsurpassable chronological boundaries (which would have undermined the whole book) the author has sought, and frequently found, a continuity of ideas, concepts and philosophical affiliations running through this long history.

The book is divided into four Chapters. Besides the Introduction and Conclusion there are two annotated bibliographies of recent authors and particularly fine indices of both the ancient authors cited and the subjects they considered.

These last will allow the book to be easily used by Anglo-Saxon readers, whose cultural background has discouraged the knowledge of even one 'foreign' language. Chapter I (the Legacy of the Ancients) is devoted to Greco-Roman understanding of the Earth and represents a unique contribution, both in quality and quantity, for this kind of book. The ideas of Ovid, Aristotle, Herodotus, Strabon, Straton (here exposed as the author of a remarkable 'uniformitarian' text), Seneca, Pliny, Posidonius among others are discussed through a didactic (from a 'modern' point of view) classification of the subjects they dealt with. This then enables the comparative diachronic treatment adopted later throughout the book. The subjects covered here include: 1, the movement of seas, their infill and erosion; 2, fossils; 3, the heritage of terminology (of extreme importance and interest for work and workers on museums); 4, underground rivers,

conduits and water sources; 5, earthquakes and volcanoes; and 6, genetic theories, floods and biblical texts.

Chapter II is devoted to the Middle Ages. Despite being the shortest because of the problems of source material, whether primary or secondary, it is still very instructive and full of novel ideas. The author abandons the preconception commonly found in older books on the History of Geology, which either omit or devalue all such mediaeval knowledge. Ellenberger here gives us, on the contrary, a brand new translation (pp. 78-80) of the 10th century Arab text by 'The Brothers of Purity and Sincerity'. This reveals a vision of time which is both long and non-catastrophist; it is rightly seen by the author as an anticipation of the geostrophic cycle of Hutton. He also analyses the contributions of the 'Fathers of the Church' (such as Tertullien, Eusèbe de Cesarée, Orosius, Isidore de Séville), of the Arabs in general (including of necessity Avicenna, Averroès, then Al-Biruni and others), of Albert le Grand, Ristoro d'Arezzo, Pietro d'Abano, the highly significant contribution of Jean Buridan and his pupil Albert de Saxe, with some brief paragraphs discussing the possibility of Chinese influence on Arab science. The conclusions of this chapter are enriched by a comparative chart of the ideas of five of the major schools or scholars discussed in the previous pages (pp. 108-109).

But the book's high points are reached with Chapters III 'The Renaissance' and IV 'The 17th century'. These chapters comprise nearly two thirds of the total and provide all fourteen illustrations which so enhance the value of the book. All of these are opportune and well chosen and often provide quite new interpretations. They are never simply decorative. Despite restrictions imposed by the format of the book the author here provides a masterful analysis and synthesis in his remarks, comments and comparisons with no sacrifice of quality. It is a real pleasure to be able to immerse oneself in the Renaissance 'Geology' of Leonardo da Vinci, Bernard Palissy, Girolamo Fracastoro, Cesalpino, Agricola and others, as well as the almost unknown (at least to me) Jan van Goro or Goropius. All are revealed through original texts which have been carefully chosen and beautifully translated for us by the author.

In the chapter on the 17th century, Niels Stenson, better known as Nicolaus Stenonius or Steno, is the outstanding figure with 83 pages given to him and his work. Here we find an excellent analytical summary of his concepts, with an attentive survey of his Canis Carchariae as well as of a part of his Prodromus; of which again a new and literal translation has been given by Prof. Ellenberger from a copy of the Latin original with an accurate analysis. The discussion of Steno's major contribution, to the foundation of stratigraphy - the core of geology - is particularly valuable. Apart from Steno, Descartes and Gassendi are also discussed in this chapter. In the case of Gassendi the

comparison of his ideas on fossils with those of Palissy eloquently suggests the possibility of a real intellectual debt, and raises a problem which deserves a thorough investigation in the future.

In general the book has so many positive aspects. First is the quite excellent primary and secondary documentation obvious throughout. The excellent survey of 279 authors (quite overcoming any 'group chauvinism') has allowed some unknown, forgotten or often underrated contributions, as those of Gassendi and his work on rocks and fossils, Goropius, Pietro d'Abano and others, to be reassessed. The role of Church censorship in the Renaissance is also reassessed (pp. 210-211), and recurrent errors in existing historiography are highlighted, as in the cases of Alessandro degli Alessandri (pp. 169-170) or Steno (pp. 245-248). As the author says elsewhere (p. 170) 'at least we have here one further example of the imperious need to always return, in the History of Science, to the original sources themselves'. This is indeed the only way to properly study the History of Science.

It was thus with some astonishment that we read, in the Introduction (p. 10), the counsel given earlier by Ellenberger 'if there are readers wishing to throw themselves in their turn into the History of Geology, they ought to know that no previous background is needed to accomplish useful work as a task one needs to start with, to write a historical account, the most detailed possible of all that has been written on the personality or topic chosen. All the rest will follow'. Laudable as this intention is, it is happily disproved by the 340 further pages of this book.

The sheer quality of the work presented here is reemphasized in the translations made by the author directly from the original sources themselves. In the case of translations made by others, we can check these by quality-control, as in some cases the author has added his own version. Because the book is designed as a 'compendium' or 'handbook' the impossibility of getting down to detail is well balanced by the valuable references given to other works on the Histories of Geology and of Science in general. In addition there is an analytical Bibliography with comments at the end of the book and the general introduction to each chapter tries to put into context what is to be discussed. In view of the intended audience, a preoccupation with students and the teaching of Geology rightly pervades the whole book.

Another positive feature is the series of comparisons of past and present explanations and descriptions of the geology of particular regions; such as the Tuscan Apennines as seen today and by Ristoro d'Arezzo (p. 95), Leonardo da Vinci (p. 125) and above all by Steno (pp. 311-316). Here the author's long experience as a field geologist has been of particular benefit. Such an approach to the use of field evidence as a source for the History of Geology should be mandatory.

Finally I would like to express some disagreements. The first relates to the Middle

Ages. Despite the author's efforts to rescue many fundamental contributions from the preconceptions and false 'obscurantism' which has since befallen them, he still subscribes to some preconceptions himself, regarding Alchemy and Astrology. Here he has apparently ignored recent moves in historiography which have also encouraged the 'rescue' and proper understanding of these traditions. We may quote as examples, 'paganism was invaded by a growing movement of irrational belief, with faith in magic or astrology playing a major role' 'people adore, even more than in the past, the virtues of stones, heavenly influences, spontaneous generation. Hermetic texts reinforce this move, where alchemy equally intervenes' (p. 73) or 'even astrology and alchemy pretended to be scientific. To talk of a scientific mind implies the rejection of magic influences, occultism and other superstitions. It would be unfair, however, to blame Arab culture for all the irrational beliefs which will pervade all the texts about the Earth, for instance dealing with minerals, in the West up to the 17th century' (p. 85). Even when we are so correctly reminded that 'the role of the historian is to understand and to justify rather than destroy' (p. 92) and that 'even the texts can be read differently according to the state of mind and cultural environment of the authors' sometimes, it seems, the author too 'destroys' rather than 'understands'; as on page 42: when in Greco-Roman times 'petrifying springs were well known ... But here also fiction became mixed with reality; the objects are often referred to as having been 'transformed' and not simply 'encrusted'. Worse still it is said such water can petrify the bowels. Truly at all times people love sensationalism'.

We need to understand these changes in points of view and not evaluate the superiority or degree of truth involved in each theory, as Prof. Ellenberger so accurately and sensibly himself soon points out (p. 93). We can only regret that his admirable position has been abandoned in a few places. Perhaps the omission of Pietro d'Abano from the comparative chart at the end of Chapter II was because he was the only one to believe in the spontaneous generation of fossils? Even the rejection of astrology by Prof. Ellenberger has to be circumvented in the case of Ristoro d'Arezzo, who despite 'being a great naturalist' (p. 92) was convinced 'that the heavens governed all of nature' (p. 93) and so employed his 'scientific astrology', as Ellenberger calls it, in the explanation of the natural world.

Such criticisms cannot undermine the real excellence of this book. It should be required reading for all interested in the early history of our science up to the time of Steno (1669). We were struck with the common contradiction from books of quality; volume 1 merely whetted our appetite for volume 2.

Silvia Fernanda de M. Figueiroa
Instituto de Geociencias/UNICAMP
C.P. 6152 - CEP 13081 CAMPINAS/SP
BRAZIL

3 July 1989

Tresise, G, 1989. The Invisible Dinosaur : 'a geological detective story'. National Museums and Galleries on Merseyside, Liverpool, 32 pp. ISBN 0-906367-37-9. Price £2.95.

At the start, let me declare myself. Firstly, I am not an authority on any branch of geology; secondly, I have become interested in the history of science; thirdly, I believe - passionately - that if scientists wish to communicate to the public, they should do so in words that the public understands; and fourthly, I am a fan of Sherlock Holmes. Therefore it will be no surprise to those who come to buy The Invisible Dinosaur, to learn that I warmed to this book at first sight, and liked it better as I read through it.

Between attractively designed and coloured paperback covers, which feature on the back a snappy piece of blurb and Sherlock Holmes examining footprints, Dr Tresise (long-time GCG member) tells a true geological detective story: from the discovery in 1838 of hand-like fossil footprints in rocks near Liverpool and through the subsequent efforts extending into this century to find the identity of the animal which made them. The puzzling feature of the discovery, which provided Dr Tresise with the opportunity to call in Sherlock Holmes, was that no fossil remains of the animal which formed the prints were found in the rocks. As Sir Arthur Conan Doyle would have put it - The Adventure of the Missing Body!

These footprints were the flimsiest of circumstantial evidence for the existence of an extinct animal new to science, and there was little more than the early scientists could do than give the invisible beast the name, Chirotherium, meaning 'Hand Animal'. However, the puzzle of the anonymous footprints, discovered during the infancy of geology when fossils gripped the scientific imagination, soon attracted attention.

The solving of the mystery first centred on Liverpool, providing decades of work for local geological sleuths, but later enquiries switched to the continent and even the southern hemisphere. As in all good detective stories, there were false leads, erroneous assumptions, flawed reputations and surprising final evidence; the Invisible Dinosaur Case was not finally solved until the 1960s. Dr Tresise outlines the facts of the investigation from initial discoveries to final verdict. The first page sets the scene and whets the reader's appetite. He divides the rest of his book into chronological sections, each pithily prefaced by a quote from Sherlock Holmes, and each describing - in a different way - the various episodes and clues which finally solve the mystery. The numerous illustrations help the reader to follow the technical details. This book is an elegant example of good and economical story-telling.

A welcome feature of this book is that Dr Tresise places the Chirotherium investigations in their historical and scientific contexts, and outlines the parts performed by the various players. Thus The Invisible Dinosaur is more than a story of the discovery and interpretation

of rare fossils. It is also a brief account of the origins and basic laws of geology, of the problems of reconstructing animals from fossil evidence, and of the principles and pitfalls of palaeontological nomenclature. Between these geological musings the author interleaves stories of human interest. We read about the Reverend William Buckland, the eccentric Professor of Geology at Oxford University, kneading dough to obtain tortoise footprints, and of the part played for over fifty years by the amateurs of the Liverpool Geological Society in the long search for the missing body. These kind of stories and the use of Sherlock Holmes to lead the reader through the narrative, makes this book a good read for the non-scientist as well as the geologist.

Noteworthy are the twenty-five illustrations. There are photographs of the fossil footprints (some modern and some from archives), portraits of the personalities involved and various reconstructions of Chirotherium, including a colour painting (specially commissioned) of two of these creatures in their Triassic desert. These are interspersed cleverly throughout the book and the designers deserve commendation for enhancing the text so neatly.

Dr Tresise, Keeper of Geology at Liverpool Museum, has presumably written this book for the interested museum visitor, who has no particular knowledge of fossils nor acquaintance with technical words. In the difficult art of combining scholarship with popular appeal he has succeeded admirably and enhances the publishing reputation of the National Museums and Galleries on Merseyside.

A further thought: this book should be on the recommended reading list for geology undergraduates. For as well as introducing the history of geology to the student, this book is a well-crafted and concise investigation of a single palaeontological problem, and is a model of how to unravel sources, marshal facts, write clearly and present attractively.

There are some possible criticisms. The rather high price (£2.95) will deter some potential buyers. The title might upset some vertebrate palaeontologists (Chirotherium was not a true dinosaur as the author admits). The colour reconstruction of Chirotherium is set in a very lonely Triassic landscape, showing just two of the beasts and no other animals, whereas the fossil evidence - the footprint slabs - were covered by tracks made 'by multitudes of animals'. But these are minor drawbacks, I recommend this book. It will give you a good read, and while it will not make you an expert on vertebrate palaeontology or trace fossils, it will, as far as Chirotherium is concerned, enable you to murmur the words of Sherlock Holmes (from The Adventure of Silver Blaze) - 'At least I have got a grip of the essential facts of the case'.

Kenneth James
Department of Geology
Ulster Museum
Belfast BT9 5AB

25 May 1989

GEOLOGICAL CURATOR

PUBLICATION SCHEME

Three issues of the Geological Curator are published each year; a complete volume consists of nine issues (covering three years) and an index. Because of recent delays in publishing, issues will appear approximately quarterly, to make up the deficit to members.

NOTES TO AUTHORS

Articles should be submitted typed on good quality paper (A4 size) double spaced, with wide margins. Two copies should be sent to the Editor, Peter Crowther, City of Bristol Museum and Art Gallery, Queen's Road, Bristol BS8 1RL (Tel. 0272 223592). Line drawings should be prepared in black ink at twice desired publication size. Photographs for halftone reproduction should be printed on glossy paper and submitted at approximately final size. Both drawings and photographs should be proportioned to utilise either the full width of one column (85mm) or two (175mm). References in the text follow the Harvard system i.e. name and date '(Jones 1980)' or 'Jones (1980)'. All references are listed alphabetically at the end of the article and journal abbreviations should follow the World List of Scientific Periodicals where appropriate. Authors will normally receive proofs of text for correction. 50 reprints are supplied at cost. Major articles are refereed. Copyright is retained by authors.

REGULAR FEATURES

LOST AND FOUND enables requests for information concerning collections and collectors to reach a wide audience. It also contains any responses to such requests from the readership, and thereby provides an invaluable medium for information exchanges. All items relating to this column should be sent to the Editor (address above).

NOTES AND NEWS contains short pieces of topical interest. Please send contributions to the Editor (address above).

CONSERVATION FORUM helps keep you up to date with developments in specimen conservation. Information on techniques, publications, courses, conferences etc. to Christopher Collins, Leicestershire Museums, Arts and Records Service, 96 New Walk, Leicester LE1 6TD (Tel. 0533 554100).

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

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

ADVERTISEMENT CHARGES

Full A4 page	£60 per issue)	
Half A4 page	£40 per issue)	Discounts for space bought in three or more issues
Quarter A4 page	£25 per issue)	

Further details from the Editor.

Inserts such as publishers' 'flyers' can be mailed with issues of the Geological Curator for a fee of £60. 550 copies of any insert should be sent to Christopher Collins, Leicestershire Museums, Arts and Records Service, 96 New Walk, Leicester LE1 6TD.

SUBSCRIPTION CHARGES

UK Personal Membership	£7 per year
Overseas Personal Membership	£10 per year
UK Institutional Membership	£9 per year
Overseas Institutional Membership	£12 per year

All enquiries to the Treasurer/Membership Secretary, Andrew Newman, Hancock Museum, Barras Bridge, Newcastle-upon-Tyne NE2 4PT (Tel. 091 222 7418).

BACKNUMBERS

Backnumbers of the Geological Curator (and its predecessor, the Newsletter of the Geological Curators' Group) are available at £2.50 each (£5.25 for the double issues of Vol.2, Nos.9/10 and Vol.3, Nos.2/3; £7.50 for Vol.4, No.7 Conference Proceedings) including postage. Orders should include payment and be sent to the Treasurer (address above).