# GCG THE GEOLOGICAL CURATOR

VOLUME 5 No. 2 Issue 2 for 1987


## 'BRITAIN'S OFFSHORE OIL AND GAS'
## A NEW EXHIBITION AT THE GEOLOGICAL MUSEUM, LONDON

## GEOLOGICAL CURATORS' GROUP

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

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

## 1988 COMMITTEE






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COVER. The new exhibition 'Britain's offshore oil and gas' opened on 2 November 1988 at the Geological Museum, London. Here visitors get a bird's eye view on video of a working oil platform in the North Sea. Housed in a mock up oil platform, the exhibition looks at all aspects of our oil and gas industry and celebrates the 25th anniversary of the industry in 1989. Photograph reproduced by courtesy of the British Museum (Natural History).

# THE GEOLOGICAL CURATOR

## VOLUME 5, NO.2

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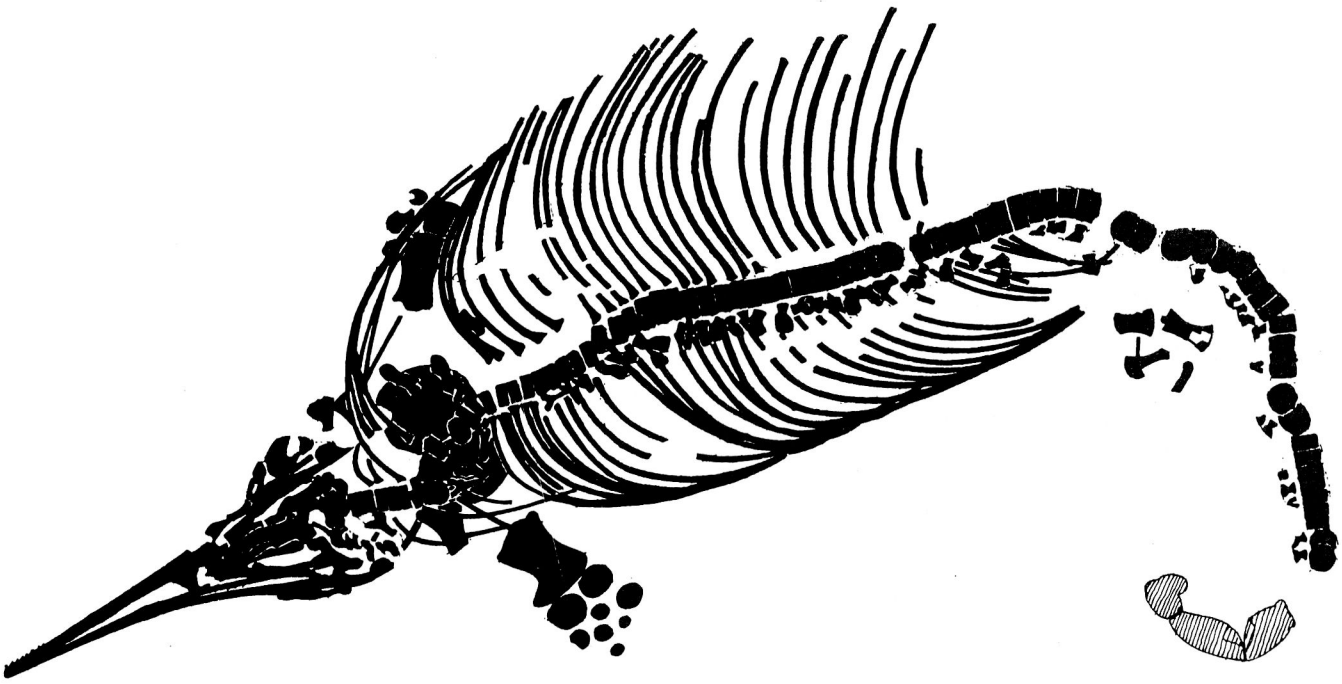
GEOLOGICAL CURATORS' GROUP

January 1989

# EDITORIAL

I put this forward as a candidate for the shortest editorial ever to grace the pages of our august organ. I must, however, at least apologise to GCG members for the delay in publishing this issue. It is my fault, but is largely a result of recent exciting developments here in Bristol. I hope that some of you will be able to come and see for yourselves at our next meeting on 9 March. One such 'development' is illustrated below .....

Peter R. Crowther
12 January 1989



The Charmouth Ichthyosaur, in plan view, drawn by Roger Clark. At approximately 8m long, this giant is perhaps the largest near complete ichthyosaur ever discovered at Lyme Bay, Dorset (unless you know different ...?). It was recovered from the cliffs below Stonebarrow, east of Charmouth, by David Sole, November 1986 - February 1987. Preparation was undertaken by David Costain throughout much of 1987. It was purchased by the City of Bristol Museum and Art Gallery in June 1988 following 'The City of Bristol Sea Dragon Appeal'. The purchase price of £26,700 was raised with the help of generous grants from the Science Museum Preservation Fund, the National Heritage Memorial Fund, the Geologists' Association, the J. Paul Getty Jnr. Charitable Trust, and the Bristol Magpies, as well as countless donations from the people of Bristol. The beast itself will co-star alongside the Westbury Pliosaur in the Museum's forthcoming special exhibition, 'The Great Sea Dragons' (17 February - 6 May 1989), with a supporting cast of other Jurassic marine reptiles from the West Country on loan from the Bath Royal Literary and Scientific Institution, the National Museum of Wales, the British Museum (Natural History), Oxford University Museum, David Sole and Steve Etches. See 'Forthcoming Meetings' on p.78.

Geological Curator, Vol.5, No.2, 1989 (for 1987), pp.55-64.

# 'FINE FOSSILS FOR SALE'

## THE PROFESSIONAL COLLECTOR AND THE MUSEUM

BY MICHAEL A. TAYLOR

### INTRODUCTION

Professional fossil collecting is undergoing a resurgence in this country, a resurgence which has major implications for our geological museums. But hardly any curators (and here I include conservators and schools service staff) appear to have considered this new trend. Some acknowledge the professional collectors as useful colleagues and others condemn them as rapacious pillagers of scientifically priceless sites (e.g. Brunton et al. 1985; Doughty 1985; Duff 1979). But very few have recognised the professional collector's unique and very important role, i.e. the collection of rare and fine fossils which no-one else is retrieving, and which otherwise remain undiscovered or are even destroyed (Benton 1986; Benton et al. 1985; Benton and Wimbledon 1985; Fowles 1986).

In this paper, I assess this unique role of the professional collector, and how the collector and museum can work together for their mutual benefit. The curator in contact with professional collectors will by definition be in contact with the fossil trade, and I discuss the present state of the trade, the value of fossils, and the implications of museums buying and selling fossils. I discuss the professional collector and site conservation in Taylor (1988a) and the legal side of fossils in Taylor (1988b).

My discussion is biased towards vertebrates, partly because collectors have always prized vertebrates simply because they are rare and attractive. Professional collectors seem less important in the history of collecting of many invertebrate groups or trace fossils, although even then money must often have changed hands between quarryman and 'collector'.

### THE ROLE OF THE PROFESSIONAL COLLECTOR

The professional collector's unique role is that of the systematic collector of fine and rare fossils. To appreciate this, consider just the coastal exposures, such as the Jurassic of Somerset and Dorset, from where collectors such as Peter and Robert Langham and David Costain have recently recovered many fine and sometimes unique vertebrates (Figs.1-3; Fowles 1986). Unless they are found quickly, the same winter storms and coastal erosion that expose the fossils will very soon destroy them; their discovery relies on continuous, systematic search in all weathers (particularly in winter) and their subsequent recovery on hard manual labour. This work, for which the collectors are seldom given credit, is the only way to rescue the fossils before they are lost to the sea or to the incompetent, piecemeal 'collection' of students and tourists.

Museum curators, amateur collectors and academic researchers can make collections of comparable importance only if they are on the spot and have the time and energy for repeated searches, or if they can set up and fund a successful reward and notification system. Few of the Upper Liassic reptiles from the Whitby area were found by amateurs; most were won by commercial collectors, jet-diggers and alum shale quarrymen (Benton and Taylor 1984). Consider the cost of running a university or museum field team all winter and spring, at the critical time when the storms and seas wash out (and often soon

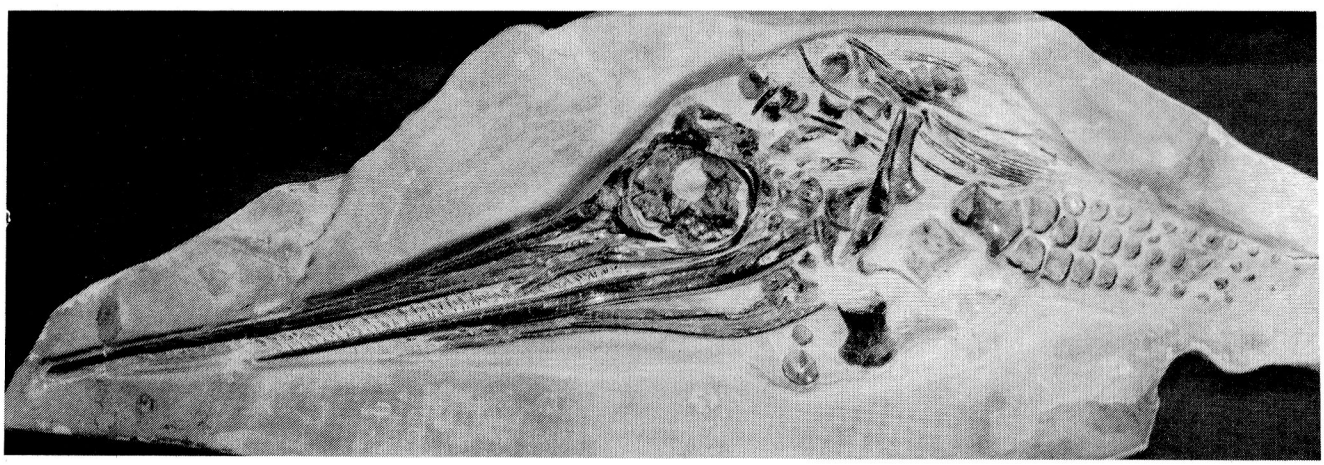


Fig.1. Excalibosaurus costini McGowan, 1986, City of Bristol Museum and Art Gallery BRSMG Cc 881; a completely new ichthyosaur from the Lower Lias, distinctive for its short lower jaw. David Costain, a professional collector from Lyme Regis, discovered the holotype (and only known specimen) on the North Somerset coast.

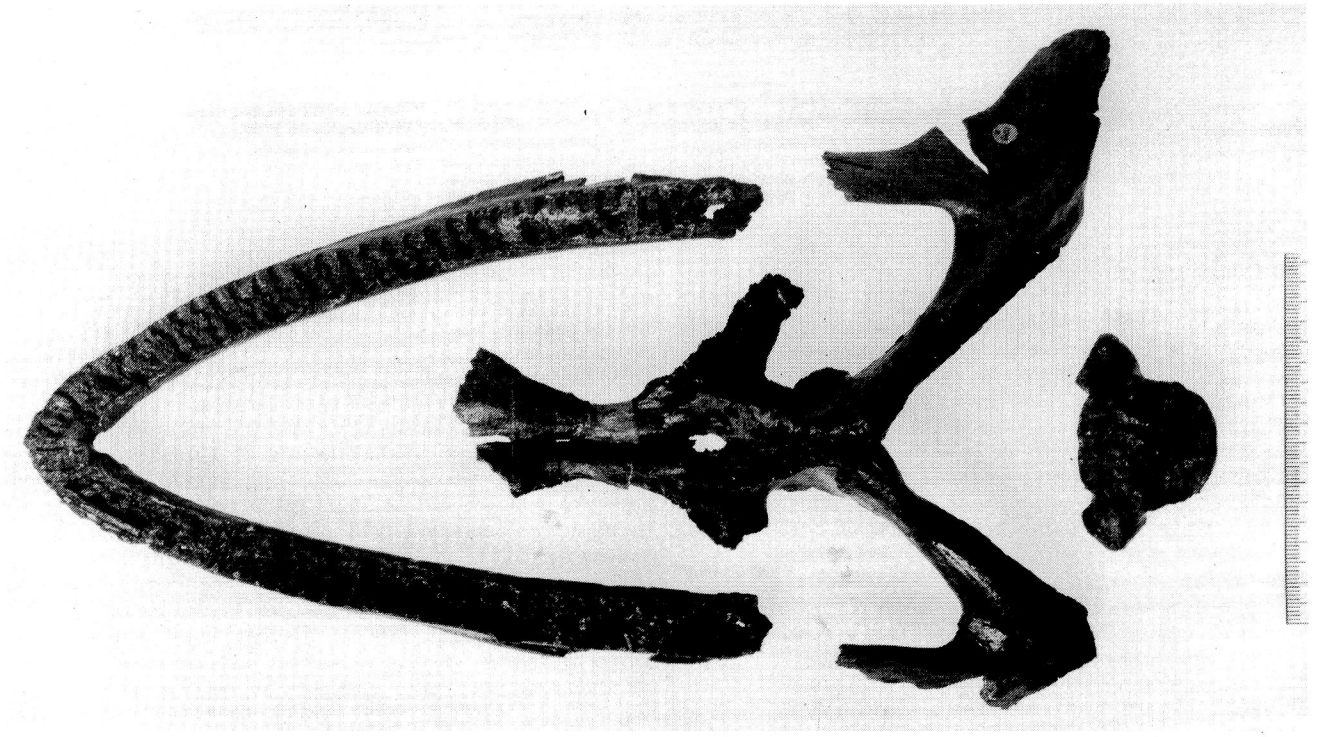


Fig.2. Kimmerosaurus langhami Brown, 1981, BM(NH) R8431; partial skull and mandible of the holotype. Peter Langham of Lyme Regis has discovered two of the three known specimens of this plesiosaur, all now in the British Museum (Natural History); the third, only recently recognised, was originally collected by R. Damon in Victorian times.

rebury) the fossils. One might have to fund the team's work by selling the surplus thousands of ammonites and other common fossils. This is not so very different from what many professional collectors do, whether full- or part-time. They sell the common material and keep the finest for their own collections, unless either forced to sell them or the fossils' (verified!) scientific importance warrants their deposition in a public museum.

Who, indeed, is the curator or academic to complain when a collector finds and retrieves fossils otherwise lost to the sea, of which some of the finest will come to public collections? And even a Lyme Regis ichthyosaur on the mantlepiece of that conservationists' bogey, the Swiss Dentist, is arguably better off there, saved from the sea - and so much more cherished than in many museums.

Professional collectors also search quarries and even open new ones. In Scotland, Stan Wood has had enormous success, finding very many new Palaeozoic animals and plants (Figs.4-7; Andrews et al. 1977; Anon.

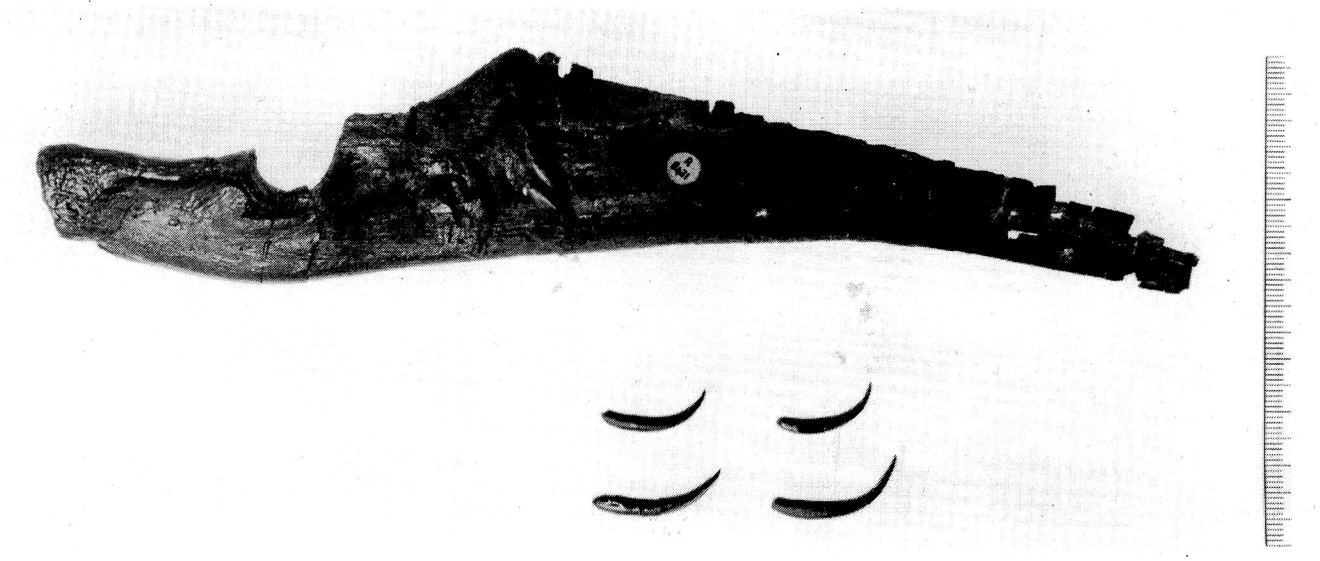


Fig.3. Kimmerosaurus langhami Brown, 1981, BM(NH) R8431; rear mandible and several teeth showing the recurved, straining teeth of this filter-feeding plesiosuar.

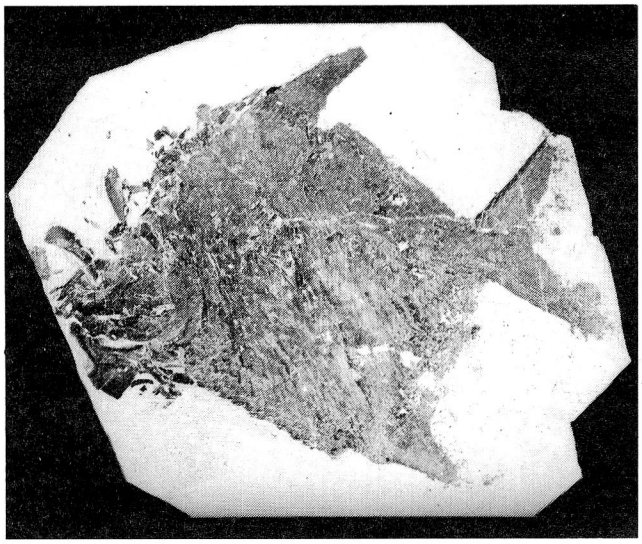


Fig.4. Chirodus crassus. Hunterian Museum GLAHM V8247; Stan Wood discovered this palaeoniscoid fish (31cm long) during the Hunterian Museum's dig in the Upper Carboniferous of Bearsden, Glasgow, funded by Manpower Services Commission and the Nature Conservancy Council; it is the largest specimen known and the first to show the pelvic fins.

1986a; Durant et al. 1986; Milner et al. 1986; Rolfe and Durant 1986; Wood 1984; Wood and Rolfe 1985). Historically, quarrymen have themselves been a major source of fossils, perhaps the most important single source for many nineteenth century collections. Many quarrymen supplemented their income by selling fossils or informing nearby collectors, swelling the enormous collections of Cole and Egerton from the Lias at Lyme, and Alfred Leeds from the Oxford Clay brickpits at Fletton near Peterborough. But the increasing mechanisation and centralisation of quarries during the twentieth century has almost completely eliminated quarry workers as a systematic source of fossils, and today virtually all major British quarry fossil finds are one-offs, reported on a chance basis (e.g. Crane 1980). We lack the systematic combination of stone quarrying and fossil collection seen at Holzmaden in Germany (Keller 1986), presumably because operators perceive the fossil market, rightly or wrongly, as offering insufficient rewards for the systematic collection of what is, after all, a by-product of the main business of winning stone.

Today's picture is even bleaker when viewed in historical perspective. We must allow for the massive under-reporting of the names of the finders of nineteenth century specimens in surviving museum documentation, partly because the names of vendors rather than donors were hardly ever recorded (Price 1986; Taylor and Torrens 1987), and partly because of the semantic ambiguity of 'collector' as actual finder or as mere amasser of specimens. We will then realise that the majority of the fine fossils in pre-First World War collections appear to have been found, in the first place, by quarrymen or professional collectors. The dearth of new fossil reptiles found between 1915 and, say, 1975, confirms this subjective impression, since it nearly matches the period when neither professional collector nor quarryman was active. (I might add, here, that such famous 'amateur' collectors as Thomas Hawkins, Alfred Leeds, and (posthumously) Charles Moore, all sold their fine collections to museums.)

Museum geologists are by comparison almost inactive simply because they can spend so little time on fieldwork and normally collect fine and rare fossils by reacting to someone else's find - and Wood (1985) rightly notes that they are in general poorly equipped, trained and funded to do so. University workers and field parties are even less likely to have the equipment and expertise to retrieve large fossils. The professional collectors are thus the major source of fine and rare fossils, although of course supplemented by the efforts of amateurs (e.g. Spencer and Isaac 1983).

## COLLECTORS AND MUSEUMS: A MUTUALLY BENEFICIAL RELATIONSHIP

Professional collectors and museums have so much to offer one another that the curator can hardly lose by making contact. The collectors offer new fossils and information on where they are found, while the museum is a source of information on geology and fossils, and a place where the fossils can be displayed and studied, ideally not too far away from the original locality - important for many collectors. Commercially, too, museums are beneficial: they buy fossils, remove them from circulation on the open market, and display them to a wider public which is thereby encouraged to take an interest and perhaps to collect (Blench 1985). These attractions of the museum-collector relationship make it important to secure the cooperation and education needed, on each side, to ensure that both work to best effect. To my mind, a museum which neglects an opportunity to acquire fine local fossils is as culpable as the collector who depletes a sensitive site for want of checking with the same museum.

### New fossils

New specimens are inherently much easier to manage in the museum than old, partly because their complete history is (or should be) known; it is, for example, much easier to decide whether to remove the matrix entirely from a new plesiosaur than from one which is a fine example of Victorian preparation and mounting, and which may be a figured specimen. It is advisable to collect specimens when they are available, since quarry infilling and coastal defences continue to destroy localities, and current fashions in collecting will not necessarily persist. There are important advantages (other than price) in acquiring material direct from the collector rather than through a middleman. Provenance, site, horizon, and other field data should be written down or at

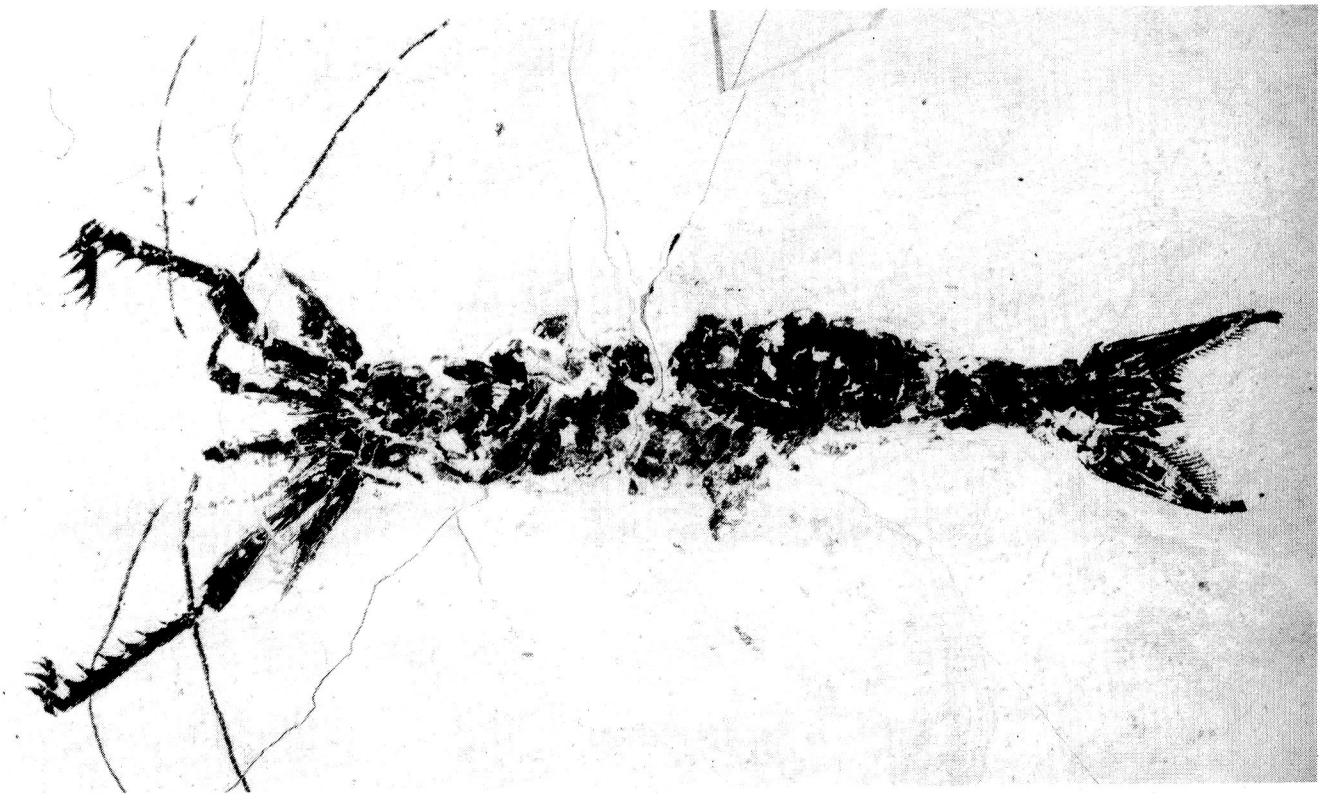


Fig.5. Anthracophausia dunsiana, Hunterian Museum GLAHM A2359; the Bearsden shrimp (8cm long) with its spiky antennae.

least obtained by asking the collector: were there, for example, any more bones in the cliff? were these vertebrae found in line? (Palmer 1983; Benton and Wimbledon 1985; Taylor 1985). We should remember that the private purchasers who have until now been the main customers of the dealers will probably be unconcerned about these details, and one important aim of the relationship between collectors and museums - and academics too - must be to encourage routine recording of such detailed data. However, much recording is costly in terms of time and therefore money, especially for the commoner and the less commercially attractive specimens which can be scientifically very important with proper documentation. One way to avoid the wholesale trashing of commercially unattractive specimens, as happened at Lesmahagow (Rolfe 1977), is for collectors to charge for the detailed information as well as for the fossils themselves (Wood pers. comm. 1986; Durant et al. 1986). If museums want this information, they will have to pay for it. Alternatively, the museum may draw up a contract with the collector for the detailed and careful excavation of a locality. Stan Wood has pioneered this way in his work for the Hunterian Museum at Bearsden (Wood 1984) and Foulden (Wood and Rolfe 1985), both funded largely by the Manpower Services Commission and the Nature Conservancy Council.

The curator must be selective when considering material for permanent acquisition, display or research, since the museum will not have the room, manpower and funds to house, conserve and display all finds. The curator will therefore have to assess the true identity and scientific interest of each find, and inform the collector when a find is truly important for the museum and would be welcomed as a sale or gift. This is one reason why blanket demands that a museum should have all new local fossils are unjustifiable; other reasons, considered later, are that the specimens have already cost the collectors a great deal of time and money, and that such demands are in any case offensive.

Sometimes the collector will lend a specimen; this can yield a display of fine fossils without long-term commitment. The Lyme Regis (Philpot) Museum had for several years a loan display from Robert and Peter Langham and David Costain (Fowles 1986). The initial loan of a specimen for long periods may also cause the accretion of a motive which in due course compels the museum to purchase the object.

The loan, sale or donation of a specimen to a museum may at first sight be unattractive to a collector, partly through simple ignorance of the constraints and procedures controlling public museums: for example, the acceptable conditions of transfer, the calendar of relevant committee meetings, or restrictions on the use of public funds for improvement of privately owned specimens, all add to the frustrations of a dealer's life. Collectors, perhaps more justly, also complain about display policies which do not place their specimens on show, if they have not been warned that the museum has obtained the specimens for research, or does not for the moment have the display space, conservatorial expertise, or a suitable display theme in its

Fig.6. The 'Bathgate Beast', Royal Museum of Scotland RSMGY 1985.4.1; the earliest complete fossil amphibian, from the hot spring deposits of Carboniferous age near Edinburgh (about 25cm long). Stan Wood discovered this and other elements of a terrestrial fauna, when operating as an independent professional collector.

current programme. One important argument in favour of the museum is that a specimen, if it is to be published in the scientific literature, must first be deposited in the permanent collection of a reputable public museum (Bassett 1979). But to deploy this argument the curator must again produce clear reasons. If the specimen appears to be genuinely novel, it should be verified by an appropriate specialist. The Bristol Excalibosaurus (Fig.1) was loaned on approval, after preliminary assessment, so that it could be examined by an ichthyosaur taxonomist. It may not be possible to have a specimen fully published at once, in which case a brief report should be published with basic details and provenance (e.g. Crane 1980) and the collector should be informed.

Information

Collectors have an impressive grapevine and the curator can learn much about old and new source localities and recent finds, and keep some specific locality and horizon data, perhaps with a photograph or cast of the specimens, whatever their ultimate fates. The collectors may be concerned about the confidentiality of locality data, but the museum should already have procedures for handling such data.

Identifying fossils and assessing their importance is a very real problem, especially (but not only) when deciding what is and is not important for public acquisition (Wild 1986; Wimbledon 1986). The curator has an important role in accumulating and making available the museum's reference library and contacts with specialists. The taxonomic literature for Liassic ichthyosaurs, for example, is scattered in such disparate sources as the Monographs of the Palaeontographical Society, Stuttgarter Beitrage fur Naturkunde, and Contributions to Life Sciences from the Royal Ontario Museum. It is thus very difficult for a collector, without access to a university library, to identify an ichthyosaur, and much the same might be said about stratigraphy, palaeontology and conservation and preservation. It is thus to some extent unjust to complain that collectors do not keep up with the latest developments. This problem is particularly important for preparation work since very few museums in this country have the in-house skills and labour to prepare new finds. The existence of preparators outside museums may well turn out to be an important supplementary source of labour for the preparation of museums' old specimens as well as for new finds, but it is important for museum conservators to maintain contacts with their commercial colleagues and exchange information about appropriate techniques and methods.

Doughty (1985) has rightly commented: 'Some of the best collections gracing the finest of our museums were the product of a close relationship between the wealthy connoisseur and the discerning dealer. Ignoring this trade has not made it go away and even if more museums become involved they are unlikely to stimulate it in a way adverse to the science.'

FOSSIL PRICES AND VALUES

A consideration of the work of professional collectors must include the fossil trade within which they sell, or at least value, their specimens. There seems to be a widely held idea that fossil prices are grossly high, and that they are steadily increasing. These ideas give rise to fears of increased demand and the despoilation of sites by gangs of collectors. In fact, the true picture is rather different. Much, perhaps all, of the recent increase in fossil prices must be ascribed to simple inflation, and to the weakening of the pound, insofar as prices here are linked to those of other countries; once allowance is made for this, fossils seem remarkably good value for money amongst the purchases which a museum can make.

The market price of a fossil depends on exactly the same variable factors which control the price of Chinese porcelain or any other collectable: current taste, rarity, and the general economic climate (Rolfe 1976; Cooper 1977; Taylor and Torrens 1987; Rolfe et al. 1988; Wood 1988). From a professional collector's point of view, the question is whether this market price is enough to cover the cost of bringing the fossil to market. The apparently high price of some fossils, particularly the larger and rarer vertebrates, is balanced by a substantial investment in time, labour and capital in searching, extracting, preparing and mounting each specimen - and in paying the taxes, rates, pensions, equipment, materials and all the other business overheads which multiply the cost of the basic labour to an often high figure.

To put this into context, the heavily subsidised labour charge of an Area Museum Council conservator is typically between £6 and £10 per hour, and true commercial rates for comparable work would be higher. The price is therefore, in part, a simple reflection of the labour-intensive nature of the collection of fossils which each need

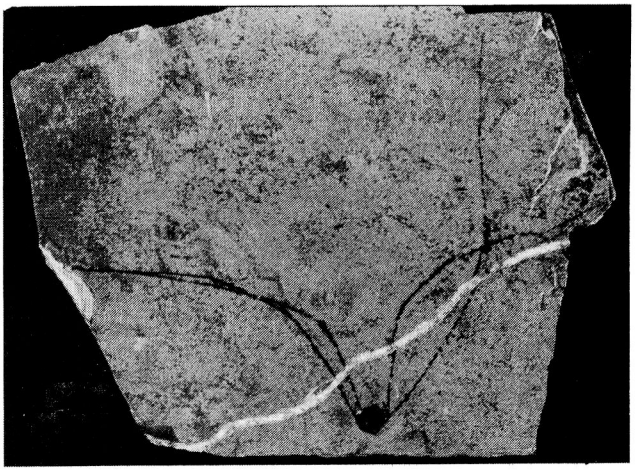


Fig.7. Hunterian Museum GLAHM A2843; also from Bathgate came the fossil harvestman (70mm leg-span).

many hours, and perhaps even several weeks and months, of work (Benton 1986). This work is essential to make the fossil available for display and study, and adds value to the fossil if properly done. Alfred Leeds made an immense collection of fossil reptiles from the Oxford Clay of the Peterborough area; almost every reptile had to be pieced together from numerous fragments. He sold most to the British Museum (Natural History). One day, a quarry owner refused Leeds access (Leeds 1956, p.94): '... one refusal definitely arose from a suspicion that my father was making an unearned profit. This suspicion went to the length of the owner paying a special visit to South Kensington and asking for an interview with the Keeper of Geology. After preliminary conversation in which the scientific importance of the specimens from the Fletton pits was discussed and in no ways disguised, the Keeper (Dr Henry Woodward) sensed an approach to a more material aspect of the question, which finally found expression in the blank inquiry, "But are not these bones very valuable?" - "Not", replied the Keeper, "until they have been through Mr Leeds' hands." That put the whole matter in a nutshell.'

The average museum staff and governing body has, if anything, assumed that the financial value of fossils is almost negligible. We have little to lose by trumpeting the fact that fossils are worth good money. Unless we do this, no museum will want to spend money on its fossils. The only way to convince a committee to allocate £400 to conserving an ichthyosaur will, all too often, be to emphasise its value of £10,000, not just its scientific or historical importance.

Unfortunately the perceived high cash value of fossils may stimulate the museum trustees to sell off what is to them an embarrassment, whatever the legality of doing so (Pettigrew 1984; Taylor 1984), and it is particularly disappointing that the Manual of Curatorship offers little guidance in this area (Cannon-Brookes 1984).

Another deplorable consequence of this inverted Philistinism is the common prejudice of museums against buying fossils, or even paying the costs of their excavation. Despite the undoubted popularity of fossils, a museum will still often balk at paying a price for a prize fossil, a centrepiece of a whole gallery, which is less than that for the second-rate objet d'art or third-rate old master which it quite happily bought the previous week (cf. Benton 1986; Besterman 1987). This disparity is heightened by the much greater proportion of the fossil's cost which represents 'real' work, rather than 'unearned' capital gains.

Geological curators must take some blame for this. 'Museum geologists have been conditioned into spending very little of their Museums' purchase grants which in turn has led to low expectation, little financial demand, and the drafting of collecting policies which are dull and confined' (Doughty 1985, p.8). So what can we do to catch up?

We will usually have to pay a fair price for our fossils. I feel very strongly that museums and academics alike cannot justly expect collectors to donate their best specimens, however scientifically important or novel, in part simply because of the work already invested in finding and preparing them. This is implicit in the system operating at Holzmaden where owners of fossils seized by the State are paid compensation for costs of excavation and preparation, plus a premium based on rarity (Wild 1986).

An examination of the funds available to help pay the price shows just how underused they are for fossils. The grant-in-aid funds administered by the Science Museum and the National Museums of Scotland have hardly been used, despite offering up to 50%, while the National Heritage Memorial Fund and the various tax reliefs do not seem ever to have been used, although both the NHMF and the Inland Revenue do in principle accept fossils and minerals (Doughty 1985). The tax rules are, however, relevant only to those one-off donors or vendors faced with Capital Transfer Tax, Capital Gains Tax, or Estate Duty (Wilson and Longman 1986), with the exception of the new rule allowing a company to make tax-deductible gifts of 3% of their dividends to charity (i.e. a charitable trust) which seems more useful to geological curators (Anon. 1986b). For the very finest fossils, it will also be worth attempting to obtain a special government grant, as with works of art. Commercial sponsorship is another source, still unused except for Stan Wood's Eoherpeton eldeceeon bought for the Royal Museum of Scotland with the help of (and named after) Livingston Development Corporation (Rolfe 1988).

Even if the museum never purchases a fossil, it will have to take current market values into account to maintain insurance cover. Security precautions may also need review if the word spreads that fossils are 'worth'

money, although the problem here may as likely be the casual, indiscriminate thief, as the selective connoisseur. This is another reason for getting to know local dealers and showing them the museum's labelling and numbering practices. However, the increased value of fossils may improve the seriousness with which the theft of fossils is taken by the police and authorities (cf. the Whitehouse affair; Steward 1986).

Deliberate forgeries would be a natural result of high prices. Faked specimens occur whenever and wherever there is a large enough commercial market, whether in nineteenth century Britain (Phillips 1980; Thulborn 1982) or in present-day Germany (Wild 1976; Wiesenauer 1980). Data fraud by dealers, the provision of false locality and horizon data for otherwise genuine specimens, is known from the nineteenth century (e.g. Thulborn 1982). Nor should we forget the scientific fraud, such as Piltdown Man. But, by and large, forgery is not a problem in the modern British fossil trade, so far as I know, although fakes and data fraud are a world-wild problem for minerals (Dunn and Bentley 1981; Dunn et al. 1981).

## THE ETHICS OF TRADING IN FOSSILS

It is not inherently unethical to buy and sell fossils, and museums need not fear becoming involved (see also Taylor 1988a). Many of the finest fossils of all types in our museums have been obtained by direct purchase from a collector or dealer, both the 'professionals' such as Mary Anning, and so-called 'amateurs' such as Thomas Hawkins and Alfred Leeds, and this process continues today. Museums, and the people who use them, clearly depend on this past and present trade.

Most fossils found by professional collectors are common forms which can only be sold to the public, rather than to museums (which will already have more than enough). Fowles (1986) has praised this, arguing that many people benefit from the immense satisfaction and stimulation of owning a genuine fossil, whether or not it leads to further interest in geology. Professional collectors are thus carrying on a public service insofar as they provide the public with fossils which most people cannot find, prepare or process for themselves, e.g. a sliced and polished ammonite.

This almost talismanic value of real fossils is, I feel, an important justification of museums' sale of common, cheap fossils, as well as casts of rare fossils. The conventional caveat, that museums shouldn't sell anything which could be misinterpreted as coming from the collections, hardly seems to apply here. Only the most naive would believe that a newly-collected and cheap fossil for sale was part of the collection. Many museums sell modern prints, drawings, ceramics and objets d'art and the visitor buys them and takes them home precisely because they are of the same nature as the much rarer items in the museum's collection. (It is probably wise to avoid shop stock which is too similar to the museum's display material.) The considered sale of fossils is thus a valid element of our strategy to bring geology to the public.

## FOSSILS AND THE AUCTIONEER

One indication of the small extent of the trade in fossils is the lack of an auction market comparable to that in antiquarian books and objets d'art. Crowther commented (in litt. 1985) that 'fossils have rather surprisingly lagged behind the tremendous increase in prices of anything collectable since inflation made money a useless asset from the late 1960's. Any such collectables, be they Beano comics, Dinky Toys, books of any kind, or cigarette cards, represent non-renewable resources of some kind, and a quality of reproduction which the public sees as lacking in today's goods. It can only be a matter of time before the British follow the Germans in recognising fossils as objects in the same class'.

There seems to be no risk of fossils becoming a commodity comparable to Old Masters with their record-breaking prices, simply because their prices are several orders of magnitude lower. Even the development of a market for fossils as collectables requires fundamental changes in taste and fashion, of which there is, so far, little sign. However, we should remember that taste varies, and the auction houses have the proven ability to push new classes of object into fashion (Cooper 1977; Meyer 1979). 'Sotheby's vigorously publicised the lucrative returns possible on treasures lying in old attics, and a new, inviting, non-elitist image of auctions took place in the public consciousness. ... the humblest items were dressed up in the formal parlance of art historical catalogue listings' (Meyer 1979, pp.175-176). In this way, festive crackers and silk souvenir handkerchiefs are endowed with the prestige of art, and their buyers form a new class heavily reliant on the auction house's own experts and expanding their collections in directions wished by the house. Compare this catalogue entry from Sotheby's sale of 'Minerals, meteorites, fine fossils ... 17 March 1972': '199 AN ICHTHYOSAUR. A fine and well-preserved specimen of the Ichthyosaur Ichthyosaurus communis, with well-preserved left front paddle, the left hind paddle fragmentary, prominent teeth and head regions, the spinal column almost complete, 46.5 in long, on Lower Lias matrix, mounted in plaster in wood box, 51 by 13.5 in, from the Lower Lias, of Jurassic age (approximately 150 million years old), Lyme Regis, Dorset.' The question of whether a fossil auction market can again develop, comparable to that of the nineteenth century (Rolfe 1976), must remain open.

## THE INDEPENDENT MUSEUM OF GEOLOGY

Professional collectors increase the pool of fossils outside publicly owned museums and allow the establishment of new museums with displays of fine fossils, comparable to those on the Continent, e.g. Holzmaden and Eichstatt. Peter and Cindy Langham have

already opened the private 'Dinosaurland' at Lyme Regis (Fowles 1986), whose displays of fine fossils complement the interpretative displays of the private Dinosaur Museum at Dorchester (Ridley 1985). On the whole, this is a healthy trend. Fine fossils on display stimulate public interest in the science, indirectly increasing public support for publicly funded museums. Public museums may be forced to reconsider their existing displays and services in the same way that our colleagues in technology and social history have been stimulated by their rivals in the private and voluntary sectors. Even those public museums with new displays have not always remembered that people come to museums in part to see real objects, not just to read 'books stuck on the wall', and if professional collectors and their museums help to reverse the excesses of this trend, then so much the better. No independent museum would or could hide its treasures in the way that the British Museum (Natural History) hides its Archaeopteryx, its Piltdown Man, its Scelidosaurus (and many British dinosaurs) and its Dimorphodon. [Note added in proof: how sad it is that the BM (NH) has only now decided to display Archaeopteryx, albeit temporarily. This is, inevitably, being interpreted as a gesture to the introduction of admission charges, yet the British people had already paid for the specimen and its upkeep, and have always had every right to see it!]

Any curator who suggests that these independent museums' standards must depend on the employment, or at least the advice, of trained professional curators, conservators, and designers, must do so in the knowledge of the deplorable state of the stores and and displays of far too many public and trust museums (Doughty 1981). The improvement of standards in new museums, where needed, will in any case be possible through almost exactly the same means as for existing small museums without specialist curators, e.g. by the production of handbooks for geology in small museums. The private museums, however, have the disadvantage that they are ineligible for Area Museum Council membership and therefore the receipt of government funds via these councils, or the councils' services, although they may benefit from informal contacts with their local Area Museum Council, and from other grants, such as those from the Tourist Boards.

Private collectors may also contribute to another new development: the open-air museum of geology. Stan Wood's suggestion of open-air sites, where the public are invited to inspect the rocks and collect under guidance, deserves very careful thought (Wood 1985; Taylor 1988a; see also Freeman 1983). Such a site, especially with a museum attached, could well be very successful, demonstrating geology in situ - like the dinosaurs at Dinosaur National Monument in the USA - and combining this with the independent museums' proven, successful formula of a participatory, active day out for the family. We already have British examples of the elements of such a museum. The temporary quarry at Bearsden combined a research dig with public events (Wood 1984). At Wookey Hole in Somerset, a karst cave, opened up by tunnelling, is part of a 'day out' that includes a display of Mendip caves and caving, a paper mill using the cave stream, and a waxwork store and collection of fairground machinery. At Lyme Regis and Charmouth the complementary Lyme Regis (Philpot) Museum, 'Dinosaurland', and the new Charmouth Heritage Coast Centre combine in practice to come very close to the ideal open-air museum. The Centre, which (like the Museum) would be inundated were it any closer to the coastal outcrops, aims to present the local geology to visitors and to 'enable them, if they wish, to find fossils safely on the beach' (Cooke 1986). The role of collecting has thus been positively recognised in contrast with, and as a consequence of, the anti-collecting agitation of a few years go, which sought a complete ban (see Fowles 1986). The National Museum of Wales includes geology amongst the aspects covered in each of its 'Family Walks' (Sharpe and Howe 1982), while written guides to areas of interest are being produced by the Nature Conservancy Council (although, as yet, for the student rather than the general public, e.g. Duff et al. 1985). But, on the whole, the typical geological museum is still located in a town centre, and we see very few outstations on coasts and in quarries, although this would be as logical as the Imperial War Museum's outstation for its aircraft collection at Duxford Airfield. Nor (with the exception of Lyme Regis) have any geological museums been wholly translated to the outcrops. Clearly there is scope for a diversity of geological museum, some in the cities, and others out in the quarries, river gorges and beaches, where the heritage is. It will be interesting to see how private collectors contribute to this diversity.

## THE FUTURE

It is almost disconcerting to find how much the image of the professional collector has changed over the two years since my first draft of this piece. The most obvious change is that professional collectors are once again bringing splendid fossils to museums and researchers; the Ulster Museum dinosaur, the Bristol Excalibosaurus, and Stan Wood's fossils in Scotland - three of the most important acquisitions of the period - all came from professionals. The NCC is itself joining curators and academics in recognising this trend (Anon. 1986c).

Geological museum workers still need, however, to assimilate the full implications of this change. Most importantly, we have for far too long devalued the financial value of fossils to a degree which is counter-productive in today's society with its money-based ethos. We have a strong argument in the fact that even the most expensive fossils are still remarkably cheap in absolute terms, compared to most other classes of museum object, and are even better value when we allow for their crowd-pulling power. It's true that we should not be so excited by buying that we forget the claims of specimen conservation for funds: but here,

the monetary value of fossils can and must be used as a lever to improve the present shocking state of this field, itself another consequence of our devaluation of geology in museums, as a comparison with fine art makes all to clear.

Another concern is the acquisition policies of museums. Many prime localities lie within the 'collecting areas' of geologically moribund museums, and the public interest and quality of the specimens from these sites may be so great that they should override the narrowly regionally based policies normally controlling the acquisition of new material by nearby museums. I am uncertain whether the British Museum (Natural History) can entirely take over the duty of the local museum to acquire local material, since it will not normally have room to display the material, and since the collectors often have strong feelings about local display of specimens.

The curator who therefore embarks on a more imaginative - indeed aggressive - policy of collecting and conservation has plenty of scope for fund raising. The increasing commercial sponsorship of major exhibitions, notably 'Mr Wood's Fossils' (by the Royal Bank of Scotland, with the NCC and the Scottish Museums Council; Rolfe 1986), itself recognises the popular interest of fossils. The Ulster Museum's dinosaur was paid for by public appeal, and Livingston Development Corp. helped to buy a Carboniferous amphibian for the Royal Museum of Scotland; however, as Plymouth City Museum also found with the Barstow Collection of minerals, there is still some resistance amongst potential sponsors (Benton 1986, Besterman 1987, Taylor 1987). It cannot be long before sponsorship (or charitable donation by companies) and fund-raising brontosaurian bazaars are a more regular part of the scene, when it becomes accepted that fossils cost money - and are worth it.

But perhaps the most interesting implication of professional collecting as its promise to extend the diversity of geological museums and sites. The professional collectors are in some ways closer to the public than the entrenched, detached attitudes of some curators, academics and conservationists. 'Mr Wood's Fossils' and 'Dinosaurland' show that the professionals are already contributing to the presentation of geology to the public. The development of site conservation policies must take this usage into account.

I strongly believe that the professional collector has a sound role to play in maintaining the health of British geology and geological museums. Whether this potential is fulfilled depends on the attitudes of geological museum workers; and perhaps, in turn, on the argument and discussion which this paper is intended to help provoke.

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UNCURATED CURATORS, No.2

# VIVIAN ERWOOD ROBSON (1890-1942) - CURATOR TURNED ASTROLOGER

BY HUGH S. TORRENS

## INTRODUCTION

This article was unusually inspired by an article in the daily press, in this case, one in the Daily Telegraph for 7 January 1987 entitled 'Towards an Enterprise Culture' by the journalist Paul Johnson. This spoke of the 'spirit of whining mendicancy and parasitism at our British universities', some of which were so bad they should be killed off completely. Johnson felt that the solution for such universities was to expose them to what he called 'the discipline of the market', whereby buyers in that market would now provide the 'educative discipline' and thus decide whether a particular activity or field of research was worthy of that market's support. In short, if people want something researched they will pay for it and if people won't pay for it, directly in the market, then that research should not be supported.

This paper describes the career of a forgotten geological curator, and how his career interacted with the 'discipline of the market' and forced him to abandon the career of geological curator for the new career of journalist, a career shared with Paul Johnson!

## ROBSON'S FIRST CAREER AS A GEOLOGICAL CURATOR

Vivian Erwood Robson was born on 26 May 1890 in Aston, Birmingham, where his father Alfred William Robson was a surgeon, living at 111 Park Road, Aston (C.A. Boardman, pers. comm. 17 July 1981). Some details of medical life in Birmingham at the time are provided by one of surgeon Robson's friends, Dr H.W. Pooler (1948), who noted in particular that Robson's family was from Yorkshire (p.57) and gave other details about Alfred Robson (pp.54-62).

Robson senior's practice as a surgeon was sufficiently lucrative for Robson junior to be sent to King Edward the Sixth School, Birmingham, in December 1901. His career at the school 'is mainly negative; in that he was not a member of a sports team, not active in the literary society or debating society, and not a prefect' (C.A. Boardman, pers. comm. 17 July 1981). Robson left King Edward's on 2 July 1907.

However, the seeds of his first career as a curator had clearly been sown very early, and at this school. The School Magazine for April 1906 contains a report of its Natural History Society's activities and includes a note that fifteen year old Robson 'has undertaken the naming and arrangement of the collection of fossils and [that] it is hoped in a short time to have [the School] Museum again in a presentable condition'. Nearly a year later the same source for March 1907 recorded that 'this term V.E. Robson has finished naming the collection of fossils and Mr Robson has presented the Museum with a handsome catalogue of the fossils of the Museum'. Robson himself later recorded (Bristol City Museum and Art Gallery [BRSMG], Geology File 392) that he was awarded the Walter Myers Prize in Geology and Palaeontology whilst at the school.

After leaving King Edward's, Robson passed to Birmingham University. Unfortunately, no Students Matriculation Registers for this period survive and the University records state only that he took the degree of B.Sc. (unclassified) in June 1913 (B.S. Benedikz, pers. comm. 18 June 1981). But other records (Anon. 1907, p.27) show that he had arrived at the University in October 1907, when he was recorded as Member 73 of the British Federated Society of Mining Students (Birmingham University Society), living at home at 111 Park Road, Aston.

Charles Lapworth (1842-1920), who was now Robson's Head of Department, later provided further details of Robson's career as a student of geology in a testimonial, written after Robson had graduated (Fig.1; BRSMG Geology File 392).

At some stage, whilst still an undergraduate, Robson had come into contact with the English ammonite worker Sydney Savory Buckman (1860-1929). This seems to have been after the publication of Part viii of Volume 1 of Buckman's major work, Yorkshire Type Ammonites, after 15 June 1912. Buckman's personal copy of this (in the Buckman family's possession) contains his later manuscript annotation that Robson had subsequently reported to Buckman the existence of another copy of the rare work by Martin Simpson A Monograph of the Ammonites of the Yorkshire Lias (1843), and which Buckman had in course of revision. This new copy was to be found in the library of the British Museum (Natural History) (Buckman 1909-1930, vol.1, pt.viii, E).

Other evidence of Robson's involvement with Buckman comes from Vol.2 of the same work: on p.D of Part xviii (1919) Buckman noted that 'Mr V.E. Robson has given very considerable assistance in the preparation of the MS and in many other ways'. The Robsons also helped Buckman with material that they had collected, and either Vivian or his father must be the 'Dr Robson of Birmingham' who obtained specimens of the ammonite Waehneroceras and associated stratigraphic data, from a quarry at Kayes Cement Works, Long Itchington near Southam in Warwickshire on which J.W. Tutcher (1858-1951), the Bristol-based palaeontologist, reported in

*From Professor C. Lapworth, M.Sc., LL.D. (Aber.), F.R.S., F.G.S.*

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GEOLOGICAL DEPARTMENT,
UNIVERSITY,
EDMUND STREET,
BIRMINGHAM.
*July 29th*, 1913.

MR. V. E. ROBSON, B.Sc, informs me that he is a Candidate for a post in which a practical knowledge of Geology and Palaeontology is desired, and asks me to write a few words in testimony of his abilities in these subjects. I do so with pleasure.

I have known Mr. Robson since the year 1904, and have throughout observed his interest and indeed enthusiasm in Geology and its various branches. In the years 1904 and 1905 he attended and did well in the Elementary and Local Geology Lecture Courses and Excursions conducted by myself, and in the year 1906 attended the corresponding course in Advanced Geology. In 1907-1908 he joined the Junior Courses in Geology as a University Student, in 1908-1909, the Senior Courses, following up this work in the Session 1910-1911. 1907 – 1911

The Geological Subjects laid down for the B.Sc. degree, and taken in the various years by Mr. Robson, comprise Petrology, Stratigraphy, Palaeontology, Tectonic Geology, Economic Geology and Geological Surveying. In all his terminal and final examinations in these he did well.

In Palaeontological and Stratigraphical Geology he has always been an enthusiast, and he is a good draughtsman.

His attendance was most regular, his attention and keen interest in the subjects throughout, everything that could be desired.

He is a man of quiet gentlemanly bearing, and his love of Geology and Palaeontology would be certain to infect and stimulate all those whom he might be called upon to instruct.

*(Signed)* CHARLES LAPWORTH,
*Professor of Geology, Birmingham University.*

Fig.1. Testimonial for V. E. Robson written by Professor Charles Lapworth (1842-1920) on 29 July 1913.

1917 (Buckman 1918, pp.280-281). This was in a paper commenced in the winter of 1914-1915, the data for which must have been gathered earlier.

Fourteen of Robson's letters to Buckman over 1913-1923, and one of Buckman's of 1915 returned to him by Robson, have survived (BGS 1/1151 file M-R). The first is dated 11 March 1913 and shows that the two had already been in contact for some time before this. With this first letter Robson sent Buckman eleven Yorkshire ammonites (perhaps collected on a Robson family holiday in their native county?). The second letter (30 June 1913) was delayed by the intervention of Robson's final examinations at Birmingham. It shows that Robson had unsuccessfully examined for Buckman the Samuel Sharp (1814-1882) collection of Jurassic fossils, which was already in the University Geology Museum at Birmingham (Strachan 1979), in case it contained any type ammonites from Yorkshire needed for Buckman's work. Robson's letter also shows that he had then hoped to spend a month or two after his finals doing private palaeontological research in London. In his third letter (29 July 1913) this had become a reality and he then further offered to carry out additional research for Buckman in London

'for the pleasure and experience it will give' him. August found Robson researching enthusiastically in London, both for Buckman and himself. In the next letter, Robson sent measurements of some Sowerby type ammonites that he had located and studied in London.

In September 1913 Robson applied for his first geological position, as a Demonstrator and Assistant Lecturer in the Department of Geology at University College, Aberystwyth. The Department had been opened only in 1910 under its first Professor, O.T. Jones (1878-1967) (Pugh 1967). Robson's printed testimonials survive (BRSMG Geology File 392) and comprise that from Lapworth (Fig.1) and one from Buckman which again speaks of his valued assistance in connection with Buckman's Yorkshire Type Ammonites revision. Other testimonials were from the London-based dealer in fossils and minerals Francis Henry Butler (1849-1935), who had known Robson 'for many years past', one from the Birmingham-born and based physician and amateur geologist Theodore Stacey-Wilson (1861-1949), one from the then Erdington-based Baptist cleric and fellow amateur geologist Rev. Benjamin Oriel (1865-1936) and a final one from the veteran petrologist and stratigrapher John Wesley Judd (1840-1916). All spoke of Robson's enthusiasm and knowledge of palaeontology (in particular, ammonites). In the event Robson was short-listed but was only placed second (BRSMG Geology File 392; and letter to S.S. Buckman, 30 September 1913) and the post went to Stanley Smith (1883-1955) who had been working on Palaeozoic corals and had graduated from both Armstrong College, Newcastle-upon-Tyne and Cambridge University (Lang 1956).

Robson's letter thanking Buckman for his testimonial for the Aberystwyth job is dated 3 September 1913 and records that he was to return to London for more ammonite research that same month. On his way to London Robson called on Buckman at his home in Thame, Buckinghamshire, bringing with him an ammonite specimen that he had acquired (perhaps during his stay in London) which he thought agreed with the figure published in 1678 by Martin Lister (?1638-1712). This was of a Yorkshire specimen which had since become a type specimen. Buckman too became convinced of the possibility of its being, in fact, the long lost holotype of Hildoceras bifrons (Brugière). On Robson's return to London he continued to send Buckman ammonitological data, including the exact text of Lister's original description of the newly discovered possible type specimen. Robson ends his letter 'There is nothing I should like better than specialising in Ammonites'. The Yorkshire ammonite was figured by Buckman in 1918 (Buckman 1909-1930, pl.114) as a topotype specimen. Buckman's description noted that Robson had 'purchased it in London', probably from what is known of Robson's connections, from some dealer. Buckman recorded how struck he was with the remarkable agreement Robson's specimen showed with Lister's figure and also suggested that it might be Lister's lost type specimen, and thus the long-lost holotype. To be safe Buckman designated it as the Neotype. A reviewer of Buckman's book (Anon. 1918) sardonically noted of Robson's purchase, 'that London is a big place so that this statement does not throw much light on the previous history of the specimen. Indeed our friend Mr S. Holmes, Intelligence Department, regards it as a transparent blind'. As we shall see, this was not the only specimen of type status in Robson's personal collection, his acquisition of which was shrouded in much mystery.

The next crucial phase in Robson's career came early in November 1913 when Bristol Museum and Art Gallery finally decided to appoint an Assistant Curator in Geology. The Museum's then Director, Herbert Bolton, (1863-1936), had previously reported (in 1911) on the appalling state of the Bristol Museum's important and historic geology and mineralogy collections (Bolton 1911, pp.10, 13) and urged that extra funds, which could not come from the Museum's small normal admission-charge income, would be needed to restore them. This, he said, had to come from 'private benevolence', or in a more modern phrase, Paul Johnson's 'educative discipline of the market'. By September 1913 those 'serious hindrances to the development' of the Geological Collections still remained and no satisfactory progress was possible under existing conditions, which Bolton again greatly regretted (Bolton 1913, pp.12-13).

By November 1913 the financial situation at Bristol had improved somewhat and Bolton was able to write to a number of candidates who had to be graduates, preferably in either zoology or geology, who could be considered for the new geology post at Bristol. Robson was one of those approached, in this case on the recommendation of S.S. Buckman. Robson's handwritten application for the Bristol post survives and is dated 4 November 1913 (BRSMG Geology File 392). It reports that he had studied palaeontology, which was the field in which the assistant was most to work, for nine years, since 1904 when he was, as we have seen, still at school. He had been working privately on ammonites at the British Museum (Natural History) at the same time as he was assisting S.S. Buckman with his work on ammonites (Buckman 1909-1930). Robson knew scientific French and German and some Italian.

Buckman's personal letter of support for the Bristol position also survives (BRSMG Geology File 392). It is dated 9 November 1913 and speaks of Robson as 'a quiet gentlemanly fellow' and that Robson's work for him had shown his 'good sense of systematic methods which is what one often finds lacking in the ordinary school and university students'. Robson's application was accepted on 20 November and he was interviewed successfully on 25 November. His appointment, nominally from 1 December for a period initially of twelve months at the salary of £120, was soon confirmed, on 21 January 1914. Before the interview he had been to London again for more work on ammonites and to send Buckman final data for the Yorkshire Type Ammonites project, work which had to end with his Bristol appointment.

On 25 February 1914 Robson was elected a Fellow (no.5018) of the Geological Society of London. His sponsors for this included Buckman, Lapworth and Bolton with, in addition, Frank Raw (?1875-1961) who had also taught Robson at Birmingham and S.H. Reynolds (1867-1949), the then professor of geology at Bristol University. In his first year at Bristol, Robson 'devoted himself with considerably enthusiasm and success to the task of arrangement of a palaeontological series of invertebrate fossils' (Bolton 1914, pp.5-6). He also started a manuscript card index of Type, Figured and Cited specimens in the Bristol Geology collections which survives today. It contains 109 entries, with much useful information and shows how devoted a curator Robson had become in this, his first, curatorial post (BRSMG Geology Manuscript 81). On 18 November 1914 his appointment was confirmed, after the first probationary year. 'The Committee were highly pleased with the character and quality' of his work during the previous first twelve months.

When this appointment was confirmed, it was also agreed that he should receive annual increments to his salary of £10, up to a maximum of £150. So his new salary from December 1914 was to be £130 and, if the agreement was respected, from December 1915 he would have received a salary of £140, and from December 1916 the maximum of £150. However, a document in the Robson file at Bristol City Museum (BRSMG Geology File 392) suggests that he was not actually paid all these agreed increments, presumably because those private benefactors 'who will enable this [Geology] department to rise to the height of its traditions and exhibit its treasures worthily' (Bolton 1916, p.11) had not come forward in sufficient numbers! So much for the 'discipline' of the market in this period. This document does confirm that Robson was paid the agreed salary (£120) in his first year but that he was only paid £125, instead of £130, in his second year. It further reveals that, from December 1915, Robson was paid not the agreed £140 but only £130. Such financial problems are thought to be the major reason why Robson did not long remain a geological curator, and strongly suggest that Bristol's sponsors of such 'cultural activity' had not lived up to Bolton's expectations.

On 18 November 1916 Robson tendered his resignation from the Museum. He had been offered a position in the Admiralty on War Work and, since he was needed immediately, he asked to be released at once (BRSMG Geology File 392). His Admiralty pay is not known but, apart from any patriotic motives, it is likely to have been much higher and thus a major incentive for Robson's departure from Bristol. He was released from Bristol on 21 November 1916 (Bolton 1917, p.6) and with this his geological career effectively came to an end.

Details of two of Robson's geological research projects while at Bristol have survived. The first is reported in the Annual Report of the Museum for 1916 (Bolton 1916, p.16) as follows: 'Mr V.E. Robson B.Sc., F.G.S., has in hand the preparation of a bibliographic index of Ammonite genera. At the suggestion of Mr T.W. Stanton [1860-1953], of the American Museum of Natural History, this bibliography is being extended to include all genera of Triassic Ammonites, together with the geological horizon of type species. This has greatly increased the work but satisfactory progress is being made'. This index was later passed, when he abandoned geological work in 1923, to S.S. Buckman. Robson described it, in his letter of 13 August 1923 to Buckman, as being 'complete save for 5 genera he could not trace, up to the middle of 1914'. It may survive in the Buckman papers, either in the British Museum (Natural History) or in the British Geological Survey archives at Keyworth.

The other research project Robson undertook at Bristol concerned further careful curatorial work. Soon after he arrived at Bristol he discovered there most of the type series of ammonites which had been described in 1841 (Pratt 1841) from the Oxford Clay exposed in the excavations for the Great Western Railway near Christian Malford in Wiltshire by Samuel Peace Pratt (1789-1863). Robson had prepared a paper on these by 8 October 1915, when S.S. Buckman replied sending comments on the paper in a letter to Robson (which Robson later returned to its author in 1923, and which survives in BGS archives 1/1151, letter 11, with a six page MSS Buckman had written to accompany Robson's paper called 'The date of Pratt's species').

Robson's paper was entitled 'An Analysis of Pratt's Types of Ammonites from the Oxford Clay'. It was to have formed number one in a projected series of Bristol Museum Research Papers. In this, which again was never published, Robson recognised nine of the thirteen specimens figured in Pratt's paper as present in the Bristol collections (BRSMG C1796 - C1804) and he also traced a tenth figured specimen, then in the collections of Imperial College, London. Robson redescribed and, for the first time, photographically figured all ten in this paper, on four plates using photographs taken by J.W. Tutcher.

But difficulties arose concerning the publication of this paper during World War 1 (probably again of a financial nature) despite its being nearly ready for the press and it was laid aside. Later, in 1923, Robson passed the original typed version (which survives in the Buckman archive in the British Museum (Natural History)) to Buckman 'for publication as far as possible in Type Ammonites' (Buckman 1909-1930, vol.5, pt. xlv (1924), p.6). Of the material from Robson's paper subsequently used by Buckman, two new species published by Buckman, Hecticoceras rursicostatum (pl.501) and Kosmoceras acutistriatum (pl.486A, B), should be credited to Robson's authorship 'in Buckman' according to Recommendation 51B of the International Code of Zoological Nomenclature (1985) and not to Buckman alone, as all subsequent authors have done (e.g. Kennedy and Cobban 1976, pl.1).

Robson had arrived in London to work for the Admiralty late in 1916. In March 1917 he wrote to Buckman from Putney about how hunting for digs in London and colitis had both been troubling him, but that he liked the work at the Admiralty and was getting on well with it. He then added 'what will happen after the war I don't know possibly I may stay on but I rather doubt it. I expect I shall drift back into Geology in some form or other though not at Bristol' where he said Bolton had spread the tale of his departure. Palaeontology, he noted, he had dropped entirely. The Admiralty work under such war-time conditions was undoubtedly hard and in another letter of 23 December 1917 he noted that he had then been working late into the evenings at the Admiralty for some months.

## ROBSON'S LATER CAREER

The end of Robson's work as a geological curator and as a geologist was finally signalled early in 1921 when he resigned as a Fellow of the Geological Society and suddenly became a journalist and professional writer, on the subject of astrology. One could hardly find a more remarkable career change for any geologist. I have not felt it worthwhile to investigate Robson's career as an astrologer in great detail but the first date I have found Robson active in this field is 1919. This is the date of publication of a Life of Alan Leo (1860-1917) by Leo's widow Bessie (Leo 1919). Alan Leo had been a prolific writer on astrology and had founded the weekly magazine Modern Astrology in 1895, whose offices were at 39-41 Imperial Buildings, in Ludgate Circus, London EC4. In this biography there is a horoscope for Alan Leo (pp.174-203) by Vivian E. Robson, which provides clear evidence of Robson's interest in the subject at this early date.

After his resignation from the Geological Society, Robson seems to have turned full time to the business of astrological journalism. He soon became a joint editor of the magazine Modern Astrology, with Leo's widow, and in 1922 the first of his eight separate astrological books and pamphlets was published, A Student's Text Book of Astrology. The book's preface is from a Bedford Park, London W4 address and London now becomes his permanent, and final, place of residence. The eight astrological works that he published up to 1937 are listed below, in order of their dates of first publication.

1. A Student's Text Book of Astrology. London, 1922.
2. The Fixed Stars and Constellations in Astrology. London, 1923.
3. (editor) Alan Leo's Dictionary of Astrology. London, 1929.
4. The Radix System of Astrology. London, 1930.
5. A Beginners Guide to Practical Astrology. London and Philadelphia, 1931.
6. The Calculation of Sunrise and Sunset. London, 1932 (privately published by the author).
7. Electional Astrology. London and Philadelphia, 1937.
8. Your Affinity - the Astrological Guide to an Ideal Marriage and to Greater Happiness in Marriages already contracted. London, 1937.

Copies of all eight of Robson's books are preserved in the British Library, London.

Two points are perhaps worth noting in this astrological output. The first is how the title of the last changes on reprinting, presumably in ever increasing attempts to achieve greater and greater 'market penetration'; becoming progressively Astrology and Sex in its 1941 reprint edition, then Astrology and Human Sex Life in the 1963 reprint, and finally An Astrology guide to your Sex Life in the 1967 reprint! The second point is the frequency with which nearly all titles have been reprinted since publication. Of the eight titles above, numbers 1, 2, 3, and 5 were all still in print in 1987 and of the remainder, numbers 7 and 8 have been reprinted a number of times in recent years, and thus well after Robson's death. Number 4 on the above list is subtitled Robson's Astrological Series no.1, although no subsequent publication in such a series ever appeared.

One final mystery remains in connection with Robson's geological work. In 1935 his own personal geological collection, by then a general unlabelled collection of fossils, turned up in London. It was purchased by the London dealers Gregory, Bottley and Co. who then sold to the British Museum (Natural History) 63 ammonites, the majority of them from the Robson collection (BRSMG Geology File ROB 1). The neotype of Hildoceras bifrons from the Alum Shales of Yorkshire was still present and was later registered BM(NH) C55848 (Phillips 1977, p.86). But an even bigger surprise was when L.F. Spath (1882-1957), the Museum's ammonitologist, recognised in the Robson collection an unlabelled specimen, bearing only the number 4130, as another of considerable taxonomic and historic significance. This was the long-lost holotype of the American Carboniferous goniatite Goniolaboceras goniolobum (Meek) which had been posthumously described by Fielding Bradford Meek (1817-1876) in 1877, in his contribution to the publications of the United States Geological Exploration of the 40th Parallel (Meek 1877). This exploration had been commissioned in 1867 as part of the Congress-sponsored exploration of the American West. Clarence R. King (1842-1901) was the geologist in charge of the geological investigation of a belt of land westwards along the 40th Parallel of latitude in Nevada and Utah (Bartlett 1962; Rabbitt 1979). The type goniatite which was then found to be in the Robson collection must have come originally from New Mexico, to the south east of the survey area, and its recognition was a considerable achievement by Spath in the absence of any labels (Furnish and Glenister 1971, p.308). It was registered BM(NH) C38093 but is now represented in the

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Fig.2. An advertisement for Modern Astrology on the last page (p.214) of Robson, V. E. (ed.). 1929. Alan Leo's Dictionary of Astrology, 214pp. 'Modern Astrology' Office, London.

British Museum (Natural History) collections merely by a plaster cast since the United States National Museum claimed in 1965 that the original was their property and the BM(NH) Trustees instructed it to be returned (Phillips 1982, p.24). If it was stolen, the mystery still remains of how it ended up in Robson's personal collection; a mystery not now likely to be solved. Correspondence in 1965 between the British and Bristol Museums (BRSMG Geology File ROB 1) shed no light on this, but T.W. Stanton's earlier connection with Robson's work on Triassic ammonites in 1914, which might have involved a visit by Robson across the Atlantic, may be highly significant.

The sale of the Robson collection seems likely to have co-incided with relocation of the Robson home in the London area. For in 1936 the electoral registers for Fulham, London recorded V.E. and one Joan Robson living at 56 Talgarth Road, where they remained until 1939. Later in 1939 they moved again to nearby 2A Castletown Road, also in Fulham, W.14 and here Vivian Erwood Robson died on 31 December 1942 at the early age of 52. His death certificate records him as a journalist - a perfectly acceptable description of a man who gained his living by writing on astrology! The local newspapers (the Fulham Chronicle and West London Observer) make no mention of his death (T. Rix, pers. comm. 21 January 1982), but this was at a time when newsprint was rationed and news thus much restricted. One final intrigue is indicated by the death certificate, which at first gave the informant of his death as 'J. Robson, widow of deceased in attendance' of the same address and who had informed the registrar of his death on 1 January 1943. But nearly four months after this, Joan (now Alldred, otherwise Robson) and Ellen Caroline Winifred McGoun corrected the description of Joan's status as 'widow', to one stating that she

'had merely caused the body to be buried'. This was done by a Statutory Declaration and shows that she had been Robson's common-law wife or mistress. There was no inquest and Robson left no will by which the success, or otherwise, of his journalistic-cum-astrological ventures can be judged. The same lack of a will means his intriguing relationship with Joan Alldred cannot be investigated either.

## CONCLUDING REMARKS

Readers will have their own views about the relative values, socially, culturally and scientifically, of ammonite studies versus astrology. Ammonite studies have a known and proven value in the search for vital raw materials. But they are, as far as the experience of a recent postgraduate applicant to do research in such a field in a British University can demonstrate, completely in the doldrums. Recent press reports, however, do indicate that the Natural Environment Research Council is now aware that classical palaeontological studies have reached near extinction in this country. Of astrology, on the other hand, the prestigious journal Nature stated in 1983 (vol 301, p.184) that it is 'sheer superstition, all the more pernicious because so many people think otherwise'. But one has only to listen to the television or travel on the London Underground to learn that astrology is thriving in 1987. The problem is that, in Paul Johnson's 'enterprise culture' of today, decisions over what is worth support are not likely to be made in terms of such subtleties, but on the basis of the numbers who will support any particular decision. Clearly all remaining ammonite workers should retrain as astrologers!

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# FORM FITTED PALLETS FOR THE STORAGE OF LARGE FOSSILS

BY GERALD R. FITZGERALD

## INTRODUCTION

Storage of fossils, as with all museum collections, is a serious matter, and proper procedures are essential for their long-term preservation. Each time a fossil is abraded or broken, a little is lost - and then replaced by plaster or some other gap-filling material. All things deteriorate but proper storage can slow the process and is the first line of defence in ensuring the longevity of collections. Assuming proper preparation techniques have been used, active conservation intervention is generally symptomatic of a failure of the storage procedures.

'In recent years conservators, curators and architects have become increasingly aware of the effects of the environment upon museum collections. We now make great efforts to control such known causes of deterioration as temperature, humidity, light, airborne contaminants, insects and handling. However, we often forget that all objects have weight; and it is this forgotten factor - the ever present effect of gravity - that is one of the prime causes of physical deterioration' (Ward 1982, p.54). When an irregularly-shaped object is placed on a flat surface, it makes contact with the surface at only three points. This causes crushing at the points of contact and sets up stresses on the unsupported areas of the object. When moved, these objects (especially if heavy) are often slid on the shelf and bumped together, resulting in abrasion and chipping. Small fossils can be well protected in padded boxes, but large fossils which are heavy and fragile are traditionally stored on open shelving and are quite susceptible to such damage (Fig.1). Broken fragments on shelves are silent testimony to the failure of this type of storage.

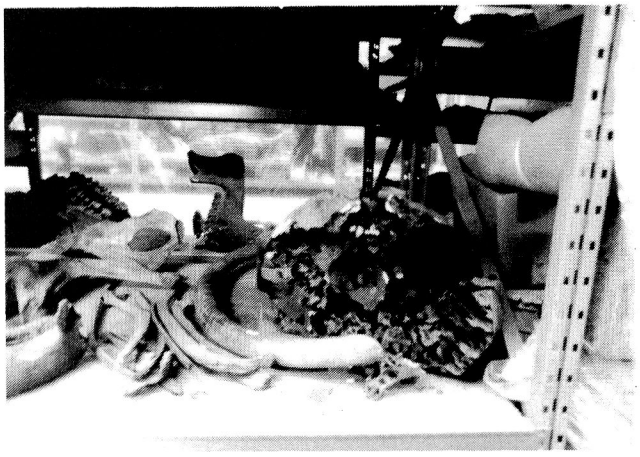

Fig.1. Fossil storage on open shelving like this is typical of many museums.


Fig.2. A woolly mammoth skull on its form-fitted pallet. The polyethylene dust cover has been rolled back to show details. Note the sheet ethafoam padding, the wads of wood-wool and plaster for anchoring the form on the pallet, and the wood plaque with the large specimen number. (This is the same skull seen in back view in Fig.1.)

The form-fitted pallet (Figs. 2 and 3) is a technique which addresses these problems. It incorporates two basic ideas: the half-shell plaster and burlap support familiar to most palaeontology laboratories; and palletization which is commonly used in industry. Palletization has long been suggested for use in museums (Silvester 1973; McConnell 1973; Gentry 1979) but, unfortunately, pallets alone do little to protect fossils. Apart from facilitating handling, they are only effective for unprepared field-jacketed blocks or, with some padding, for slab specimens. The integration of the two concepts takes palletization a step further. The method has been developed and used since 1980 at the Paleobiology Division, National Museum of Natural Sciences, Canada, for the storage of large prepared fossils as part of an overall plan for upgrading the storage of the vertebrate fossil collection (Fig.4).

## CONSTRUCTION OF FORM-FITTED PALLETS

The technique for constructing the forms is simple. The fossils are laid out in the desired configuration on a padded surface and fragile material is supported as necessary. A sheet of foam (ethafoam) or bubble-pack, which will be left in the form as a layer of padding, is laid over the fossils and then covered with a sheet of polyethylene. Two or three layers of burlap and plaster of paris

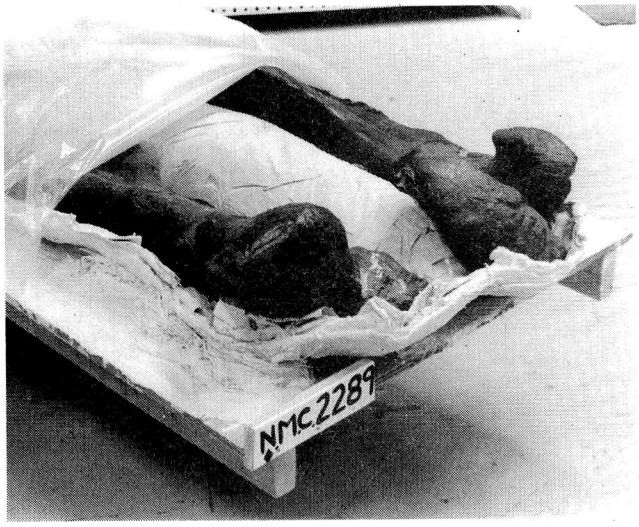


Fig.3. Dinosaur long bones on a form-fitted pallet. This earlier design, before padding was integrated into the form, used paper towelling to separate the fossils from the form.


Fig.4. Palletized specimen being placed on a storage shelf using a fork-lift. Specimen numbers are clearly visible from the floor. Oversized specimens can be placed on top of the 3m-high shelving to save space.

are laid in a manner similar to standard field jacket construction (Rixon 1976). Care must be taken not to tuck the plaster and burlap into any undercuts which might trap the fossil in the form. If a sand table is used to support the fossils, the problem can be eliminated by sculpting the sand to fill undercuts and holes. Once the form is set, it is lifted off the fossil(s) and the sheet of polyethylene is removed. The form is attached to the pallet using wads of wood-wool and plaster, and allowed to dry overnight. The form is then trimmed to size. Pallets are constructed with 18mm plywood screwed to 50x100mm timber skids. A wood plaque with a 50mm high specimen number painted on it is fastened to the front of the pallet. If more than one fossil is stored on a pallet the individual specimen numbers should also be marked on the form under the fossil. An outline of the fossils on the form also aids in orienting them correctly when they are removed for study.

## EXPERIMENTAL MONITORING

Technique. The levels of relative humidity (Rh) and temperature to which the fossils would be subjected during palletization was tested experimentally. The experiment was carried out twice to compare results obtained during low winter and higher summer Rh conditions.

On 10 July 1985 a plaster and burlap form was built over a Casella T9240 thermohygrograph while a second thermohygrograph ran nearby as a control. Work was done on a bubble-pack pad on the floor and water was deliberately spilled to simulate the worst possible conditions that could arise due to accident. The form was removed two and a quarter hours later and allowed to dry for two days. It was then attached to a pallet and the thermohygrograph was placed on the form, covered with a 4mm polyethylene dust cover, and placed on a shelf in the storage area.

A second control thermohygrograph was located on a nearby shelf. The results are illustrated in Figs. 6A and 7.

The experiment was repeated under winter conditions on 14 November 1985. This time a second form was constructed over two thermohygrographs as illustrated in Fig.5A, while a third one ran nearby as a control. The form was lifted three and half hours later and was allowed to dry for one day.

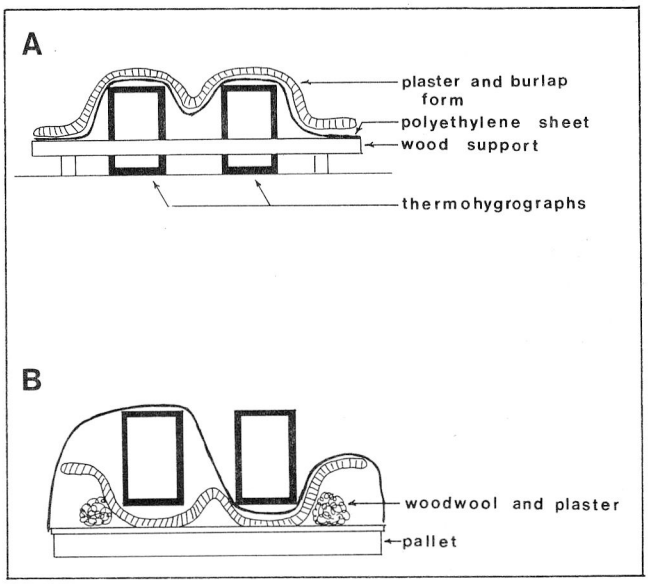


Fig.5. Experimental setups to measure changes in Rh and T: A, beneath a plaster and burlap form during construction; and B, to which a fossil would be subjected while a form is drying.

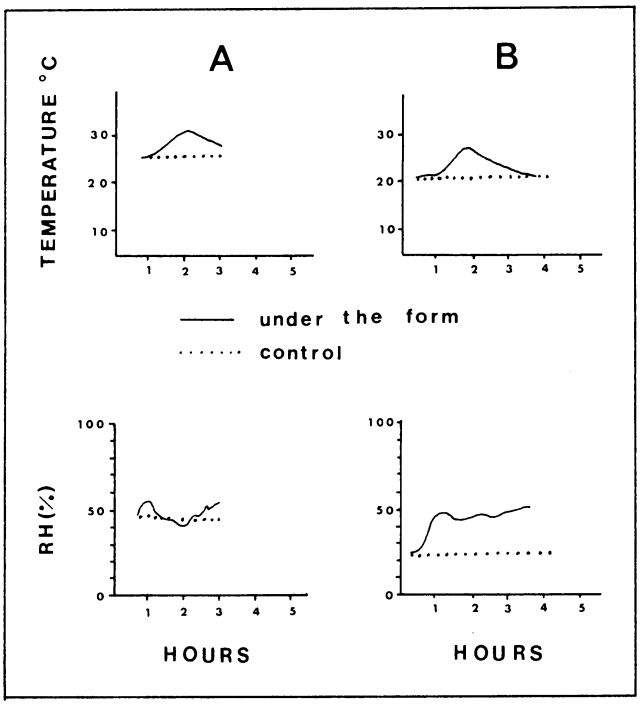


Fig.6. Rh and T recordings during construction of a pallet: A, 10 July 1985; and B, 14 November 1985.

It was then attached to a pallet with wads of wood-wool and plaster, and the two thermohygrographs were installed one below and one above the 4mm polyethylene sheet (Fig.5B). The pallet was placed on a shelf in the fossil storage area with a control thermohygrograph nearby. Because the two tracings obtained during construction of the form were almost identical, only one is illustrated in Fig.6B. The drying results are illustrated in Fig.8.

The second test was allowed to run for another month to assess the effectiveness of the pallet in stabilizing the Rh levels to which a fossil might be subjected when changes in Rh occurred in the storage area (Fig.9). A control thermohygrograph was not used because previous results (Fig.8) showed that the records of the control thermohygrograph and the one on the pallet above the polyethylene were the same.

Results. In both cases during the construction of the plaster and burlap form, Rh rose around the thermohygrograph until the heat from the exothermic reaction of plaster hydration caused it to fall (Fig. 6A and B). Once the plaster started to cool, Rh gradually rose again but only reached about 55% - even in July when the ambient Rh was about 45% in the work area.

Both drying patterns were similar (Figs.7 and 8). It took about twenty-three days, including the time that the forms were left to dry before the thermohygrographs were installed, for them to reach ambient room Rh. During the first eleven days, the Rh under the polyethylene sheet was at or near 100%; the ink bled on the recorder tracings and for part of the time condensation was observed under the sheet.

In the extended test (Fig.9), Rh under the polyethylene was slightly more stable than in the storage room.

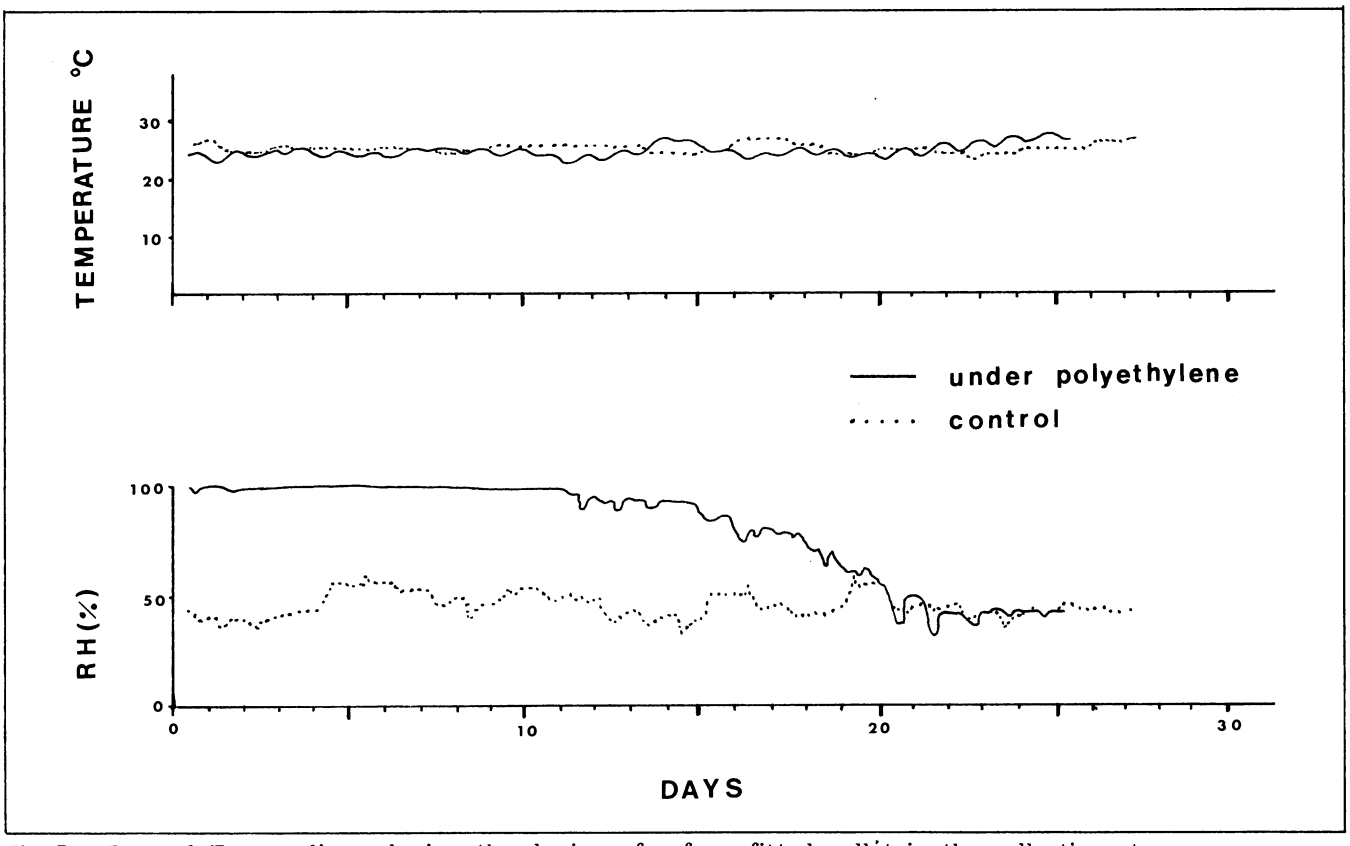


Fig.7. Rh and T recordings during the drying of a form-fitted pallet in the collection storage area; starting 12 July 1985.

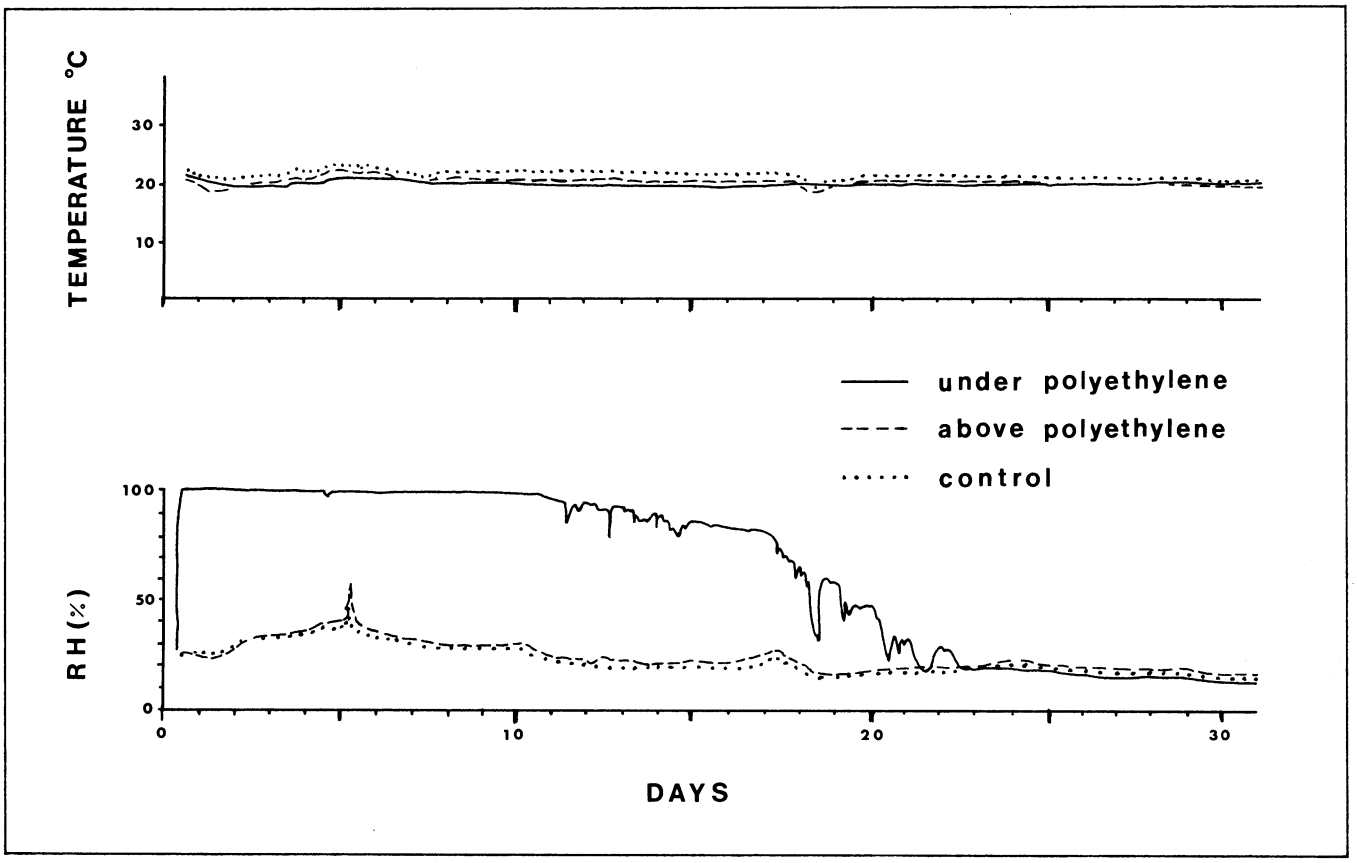


Fig.8. Rh and T recordings during the drying of a form-fitted pallet in the collection storage area; starting 15 November 1985.

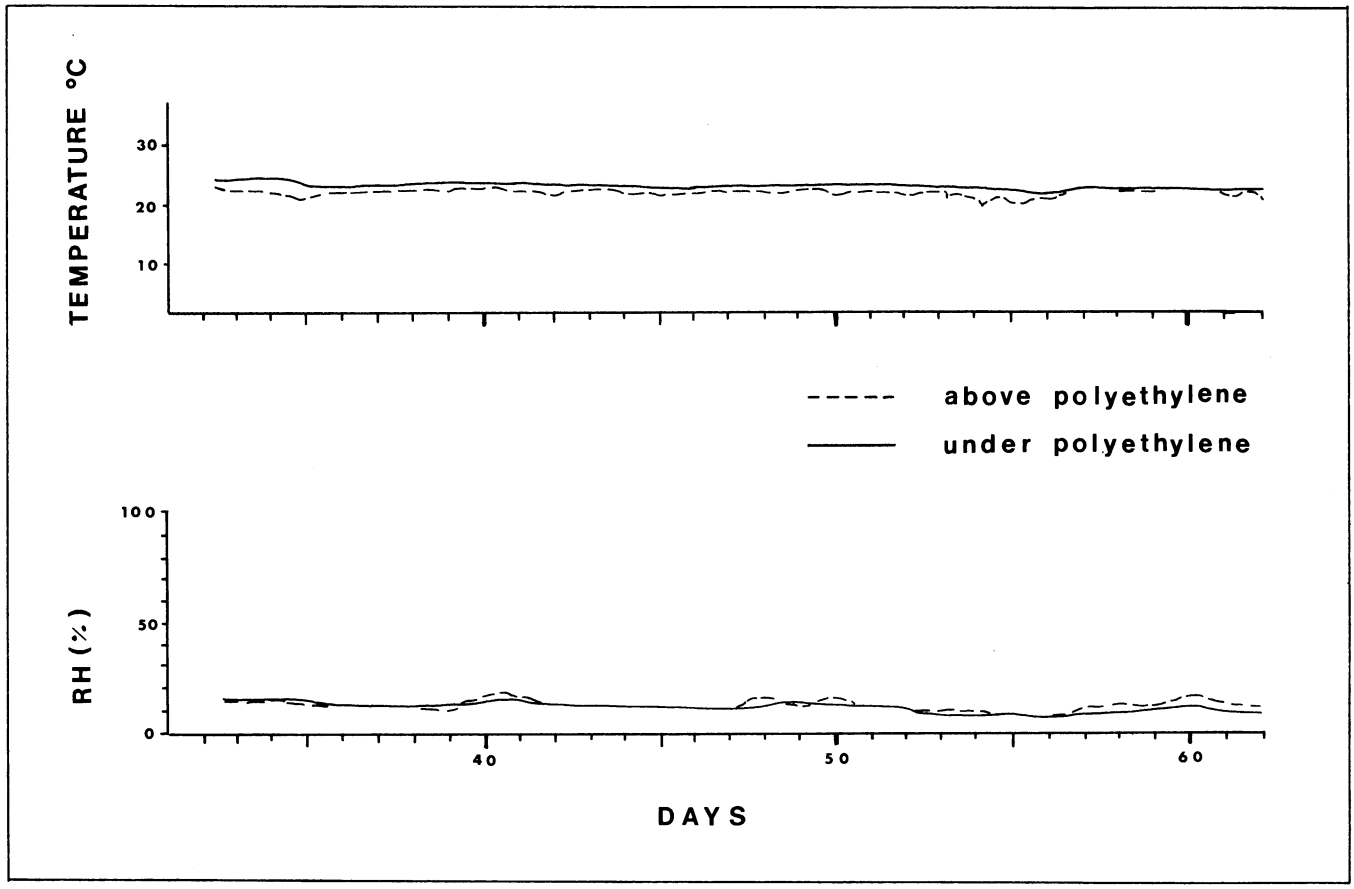


Fig.9. Rh and T recordings during an extended test, starting 16 December 1985, to measure the bufering effect of the form-fitted pallet.

## DISCUSSION

The Rh levels under the forms during construction were well within the safe limits for most fossils. However, reactive pyritic specimens would have been at risk as pyrite oxidation is initiated at an Rh around 60% (Howie 1978, 1979). Considering that Rh under the form reached about 55%, and the recorders are accurate to within ±5%, the danger level was approached if not surpassed. Also, if construction was done under dry ambient conditions (as in the November test), subfossils might be adversely affected by rapid humidification (Fig.6B) even though the maximum Rh level was not excessive. These problems might be controlled by enclosing Rh-sensitive fossils in polyethylene bags during construction of the form (although polyethylene film is not impermeable to water vapour, even over the short term; the use of polyvinylidene chloride based films, such as 'Saran', might be considered).

During the drying phase, Rh levels under the polyethylene sheet were unacceptable for almost three weeks. However, when the thermohygrograph was separated from the form by a 4mm polyethylene sheet, Rh was almost identical to the level in the storage area. Therefore, most specimens can be put directly into the form without a dust cover if a polyethylene sheet is used to separate them from the form. For highly sensitive specimens, such as pyritized or subfossil material, it is safer to dry the form for at least a month before installing the specimen. Small holes in the polyethylene between the fossil and the form could result in unacceptably high Rh microenvironments next to the fossil. It should also be noted that if many forms are drying in a storage area, the Rh of the whole room might be elevated to levels that could affect other parts of the collection.

Polyethylene sheets separating the fossils from the forms should not be removed and dust covers should not be installed for at least a month. The extended test to monitor Rh under the polyethylene showed that the form provided some stability for minor short-term fluctuations (Fig.9). The mass of plaster and burlap in the form probably provides sufficient buffering to protect the fossils from such brief variations in Rh, but because the system is not sealed, there is little effect in providing stability against long-term changes in Rh.

Padding, such as ethafoam or bubble pack, should be incorporated into the forms to help protect the fossils from shock, vibration and abrasion. Dust covers are essential for the protection of fossils, as dust is very damaging (Moncrieff and Weaver 1983) and can result in permanent discolouration. Accumulations of dust will eventually necessitate cleaning, thereby exposing the specimen to additional risk. Polyethylene sheet was chosen for dust covers because the storage area is protected with fire sprinklers and, should one discharge, it would provide protection from water damage. The 50mm high specimen numbers attached to the pallets provide for easy location of specimens. With a forklift, one person can readily remove or replace any specimen in the rack storage area. In addition, the combination of palletized specimens and a forklift allows for efficient use of storage space, with heavy specimens being placed at any height on the shelves.

Other materials, such as fibreglass and polyurethane foam, were considered for construction of the forms but were rejected for a number of reasons including cost, ease of handling, flammability, toxicity and questionable stability resulting in unknown long-term conservation problems.

## CONCLUSION

Form-fitted pallets can greatly improve the storage of large, awkward and heavy fossils. The technique is simple and relatively inexpensive providing a fully-supporting, protective base that greatly reduces or eliminates specimen abrasion, crushing, chipping and internal stress resulting from lack of support and mechanical protection. Further, if a specimen breaks, the pieces are kept together. A limited fire load is introduced into the storage area due to the nature of the materials. Greater accessibility of specimens aids curation. If form-fitted pallets are used in conjunction with a climate-controlled store room, preservation of the fossils should be greatly enhanced. However, if climate control is not available, proper support will still pay significant dividends in specimen preservation.

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# COLLECTIONS INFORMATION NETWORK, GEOLOGY

## COMPILED BY DONALD I. STEWARD

## INDEX TO VOLUME 4

PART 1. NUMERICAL LIST OF ENTRIES

# FORTHCOMING MEETINGS

Thu. 9 March 1989
GCG
Here be Dragons!
City of Bristol Museum and Art Gallery

The meeting will consider aspects of staging 'The Great Sea Dragons' exhibition (on West Country Jurassic marine reptiles). Other recent developments in the Geology Section at Bristol to be discussed include: creation of a Geology Conservation Laboratory; installation of mobile storage; and introduction of microcomputer-based documentation using the relational database 'Revelation'. The meeting will be limited to 40 people, so book early!

Fee: £1.00
Contact: Peter Crowther, City of Bristol Museums and Art Gallery, Queen's Road, Bristol BS8 1RL (tel. 0272 299771).

Thu. 8 June 1989
GCG
Worcester City Museum and Art Gallery
Contact: Rosemary Roden, Worcester City Museum and Art Gallery, Foregate Street, Worcester WR1 1DT (tel. 0905 355071).

Thu. 7 September 1989
GCG
The Hancock Museum
Contact: Andrew Newman, The Hancock Museum, The University, Newcastle upon Tyne NE1 7RU (tel. 0632 328511).

Thu. 14 December 1989
GCG Annual General Meeting
Oxford University Museum
Contact: Monica Price, Dept. of Mineralogy, Oxford University Museum, Parks Road, Oxford OX1 3PW (tel. 0865 272590)

# LOST AND FOUND

## COMPILED BY DONALD I. STEWARD

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### General

# NOTES AND NEWS

## COMPILED BY MICHAEL A. TAYLOR

AYLESBURY PLIOSAUR

Kate Rowland (Keeper of Biology and Geology, Buckinghamshire County Museums, Aylesbury) is presently the custodian of a partial pliosaur skeleton from the Kimmeridge Clay of the town, discovered by Dr Michael Oates in the side of a temporary excavation at the Watermead development site. It was excavated by archaeologists of the Aylesbury Past and Present project at the Buckinghamshire County Museum and is now at the Museum pending a decision by the developers as to its fate (Figs.1-3). The specimen was at once wrapped in paper and polythene to avoid desiccation and the museum's general conservator will carry out cleaning, stabilisation, conservation and assembly following advice from Chris Collins (Assistant Keeper, Earth Sciences Conservation, Leicestershire Museums Service).

The remains, which achieved local press coverage, comprise the vertebral column of ribs of the rear part of the neck, the pectoral region, and the anterior dorsal region, although clearly rather scattered before burial. There is apparently no material other than vertebral centre, neural arches and ribs, although it is just possible that others were lost in the area already dug out by the builders. There are no reports of stomach contents or gastroliths. The horizon has been identified by Dr Oates as wheatleyensis Zone of the Upper Kimmeridgian.

Insofar as one can identify such a partial skeleton without positive characters of head, etc., Dr Mike Taylor (Assistant Keeper, Earth Sciences Collections, Leicestershire Museums Service) suggested that the specimen seems most likely to be Liopleurodon macromerus, on the grounds of general size, the proportions of the centra of the cervical vertebrae and their lack of a ventral keel (although this last may be ontogenetic).

The pliosaur shows how museums without specialist geologists can to some extent alleviate this deficiency by an intelligent use of the skills of their staff combined with specialist advice from geological conservators and curators.

SCOTTISH MUSEUMS SURVEY

The Scottish Museums Council is in the final stages of its Conservation Survey, funded by a £70,000 grant from the J. Paul Getty Trust, and designed to provide the first national overview of the conservation needs of Scotland's mueums. It will provide clear information to be used in planning and encouraging central and local government to make adequate resources available. As part of this work, several subjects were singled out for attention with specialists examining a stratified sample of collections. Geology, was, happily, one of these, and Chris Collins and Mike Taylor of Leicestershire Museums

Fig.1 The Aylesbury Pliosaur excavation at the Watermead development site, Aylesbury, being carried out by archaeologists from the Aylesbury Past and Present Project.

Fig.2. Drawing the bones of the Aylesbury Pliosaur in situ, prior to lifting and transfer to Buckinghamshire County Museum, Aylesbury.

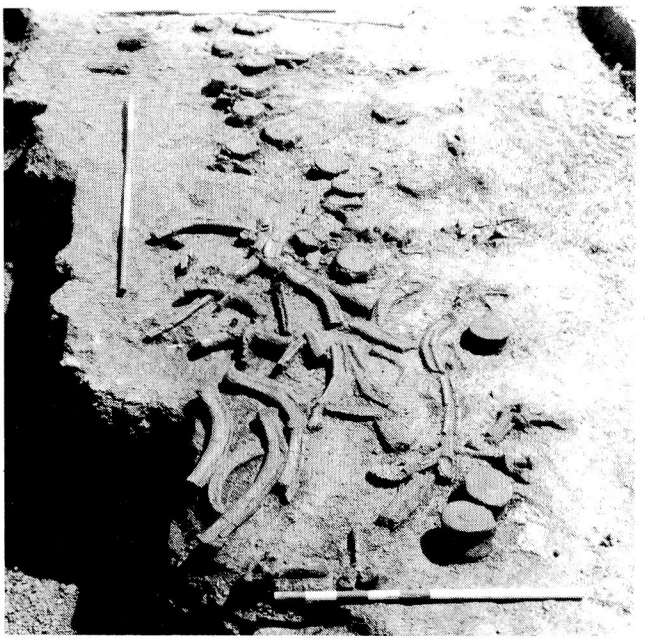


Fig.3. Aylesbury Pliosaur excavation; metre ranging poles provide scale.

Service were contracted out to the SMC for two weeks, visiting nine collections in a wide range of museums over Scotland. They will be reporting on the final conclusions and on any policy decisions resulting from this important initiative by the SMC.

## UNIQUE QUARRY BECOMES NATURE RESERVE

Brown End Quarry, Staffordshire, is of national importance for its sequence of Carboniferous Limestone and rich selection of fossils (it is an SSSI); the quarry is also an area rich in plants, insects and birds. It is the first geological reserve to come under the control of the Staffordshire Nature Conservation Trust and only the forty-sixth county trust geological reserve in Britain. Purchase of the quarry was made possible by contributions from a range of bodies including the Nature Conservancy Council, Peak District National Park, Staffordshire Moorlands District Council, Staffordshire County Council, Stoke-on-Trent City Museum and Art Gallery, Blue Circle, Tilcon and various geological groups. A further £5000 must now be raised to enable the Trust to complete the purchase and carry out essential management and public interpretation.

It is intended that the reserve will be open to visitors by appointment by mid 1988. Shortly after this the public will be able to visit freely, and interpretation facilities will be installed.

## DORANITE NEEDED .....

Dr Rab Nawaz (Assistant Keeper, Department of Geology, Ulster Museum, Botanic Gardens, Belfast BT9 5AB, tel. 0232 668251) is looking for a sample of the mineral doranite for optical, X-ray and probe work. Doranite was named after Patrick Doran (1781-1881), the Irish mineral collector and dealer, by T. Thomson in 1843, and its description appears in Greg and Lettsom's (1858) Manual of Mineralogy in Great Britain and Ireland (1858). Hey's Index (1962) considered it to be an altered chabazite. The type sample is said to come from about two miles west of Carrickfergus, County Antrim. If curators with doranite in their collections are willing to provide Dr Nawaz with a very small sample then he would be delighted to hear from you.

## ...AND SPECIMEN TRAYS AND BOXES TOO

Simon Timberlake (AMSSEE Travelling Geology Curator, Geological Museum, Exhibition Road, London SW7 2DE, tel. direct line 01 225 1733) would like to hear of any museums which have or will have any specimen trays or boxes to spare. He is looking for old stocks of acid-free (and preferably paper-lined) card trays in usable condition, as well as all those old solander boxes, bits of Dexion racking and discarded 1950's storage furniture, for use by the smaller museums in the AMSSEE area which would find it difficult to purchase these items themselves. Collection and transport will be arranged. Please contact Simon if you can help.

## NOTICE OF THEFT

A specimen of gold on quartz was stolen from the David Williams Museum Department of Geology, Imperial College, Prince Consort Road, London SW7 2BP (01 589 5111), on the evening of 7 June 1988. The specimen is about 5cm in size and comprises about one troy ounce of gold. Further details and a colour photograph are available from the Department, if required.

## POSTCARDS PLEASE!

Three postcards from the National Museum of Scotland were illustrated in the last issue (Geol. Curator, 5, p.37). Two new ones from the City of Bristol Museum and Art Gallery are included this time (Fig.4). Please send in your new postcards! Quite apart from helping to illustrate these pages (if they reproduce well enough), they let all of us see what's new and what might be useful for our own museum's sale counters.

## MUCH MORE THAN STUFFED BIRDS!

Local natural history museums offer so much these days. The Biology Curators' Group's 'Beetle-down ...' leaflet is aimed at young enthusiasts and outlines many of the activities regularly undertaken by most local museums. BCG is promoting the campaign during 1988 and 1989, supported by WATCH, the national club for young people and nature conservation.

The 'Beetle-down ...' campaign, image, leaflets and car stickers are designed to improve the public image and increase awareness of the various public services offered by museums.

'Beetle-down ...' Week is 22 - 31 July 1988, when museums throughout the country will be organising their own special events, and trying to attract media and press attention to the spirit of the campaign. For further information about the national campaign contact BCG Secretary David Whiteley, City Museum, Sheffield S10 2TP (tel: 0742 - 768588).

## PEOPLE

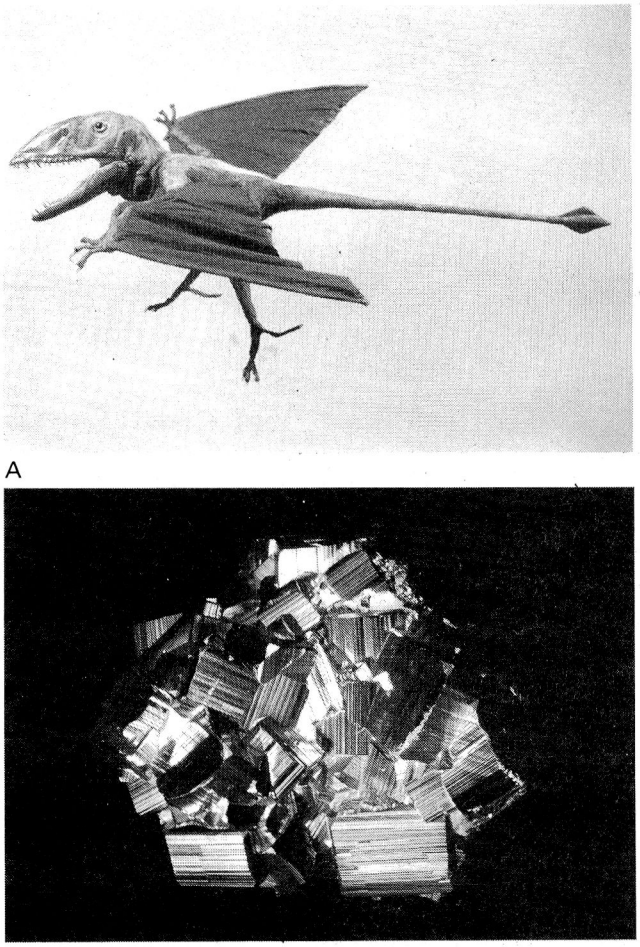
David Bertie has moved to become Depute Curator at the Peterhead Arbuthnot Museum of the North East of Scotland Museum Service, while Simon Timberlake replaces Simon Knell as Travelling Geological Curator for the Area Museum Service for South East England.

## MORE ON 'EOHERPETON ELDECEEON'

Jeremy Cherfas' recent article on sponsoring the conservation of tropical dry forests describes how an American ecologist is selling immortality in the form of a species named after you for only £3,000 (Financial Times, 21 November 1987, sent in by Ian Rolfe). This is rather more than the £1,000 paid for the naming of the Royal Museum of Scotland's fossil amphibian after Livingston Development Corporation, which Cherfas also mentions (Geol. Curator 5, p.35), but then I suppose the fossil is already extinct!

## THE AMMONITE ARMADA

A major exhibition on the palaeoecology of the Frodingham Ironstone is to be held at Scunthorpe Museum from 3 September to 13 November 1988, and also from 28 December 1988 to 22 January 1989. Simon Knell (Keeper of Natural History) writes:



A

B

Fig.4. New colour postcards from the City of Bristol Museum and Art Gallery. A, model Dimorphodon, nicknamed Didi, built and animated by Arril Johnson for a BBC TV programme on the 'Wildlife on One' series, screened in 1985; this pterosaur is known from the Lower Jurassic of Lyme Regis, Dorset and Arst, Avon; from 'The Changing Earth' Gallery.

'Situated within a mile of the centre of Scunthorpe lies probably the most extensive exposure of the Lower Lias to be seen anywhere in inland Britain. Only a 'stones throw' from Market Weighton, between the ferruginous facies of Yorkshire and the calcareous facies of the South West, the rhythmic sequence of Sinemurian and Pliensbachian shales and ironstones developed in this area contain much of geological interest. Within this sequence the 10m thick Frodingham Ironstone is of particular note, not only because of its economic significance (Scunthorpe itself is wholly the result of its exploitation), but also for the very nature of the rock and the fossils it contains.

The 'Ammonite Armada' will be the first major exhibition to interpret the Liassic geology of this region in a popular fashion and the

first temporary exhibition to be based primarily on invertebrate fossils since the Bracklesham Beds exhibition at Chichester Museum several years ago. The title is a rather devious attempt to take advantage of the vast amount of publicity surrounding some less exotic mariners this year, but is also a reference to the large ammonites to be found in the Ironstone. In fact the Ironstone does have its own anniversaries to celebrate this year: it was 130 years ago that it was rediscovered having previously been known only to the Romans, and 25 years ago that Tony Hallam published his now classic study of the palaeoecology of the Frodingham Ironstone. Hallam's conclusions remain as valid today, and aspects of this exhibition will be a direct three-dimensional interpretation of his work.

Commencing with England winning the World Cup 22 years ago the Ammonite Armada will be divided into a number of sections. The first of these sets the scene by describing the geography, climate, and inhabitants of lower Jurassic Britain. This is followed by a detailed look at the animals preserved in the Ironstone and how they lived, and will include a computer adventure game which will give you the chance of joining the Museum's fossil collections! The next section will investigate the special characteristics of this rock, its structure and form. Finally, a section will be devoted to those geologists who have worked on and collected from the Frodingham Ironstone (hopefully to include the display of the whole of the Canon J.E. Cross collection), ironstone mining, and the future of the quarries. The centre piece of the exhibition will be a spectacular full-sized reconstruction of the Ironstone sea including an ichthyosaur, giant ammonites, and numerous other invertebrates.

Why not combine a visit to the exhibition with a fieldtrip to our local quarries? Evening visits can also be arranged. It may also be possible to tour parts of the exhibition to other museums. For further details contact Simon Knell, Scunthorpe Museum, Oswald Road, Scunthorpe DN15 1LX (0724 843533). The Museum is open 10.00-17.00 Monday to Saturday, 12.00-17.00 Sundays.'

## NEW FROM THE SAHARA

Simon Timberlake was our reporter at a press conference at the British Museum (Natural History) on 3 December 1987. This was held to announce the fourth and largest joint BM(NH)/Kingston Polytechnic expedition to the Sahel region of the Sahara (Fig.5), leaving London on 20 December 1987 in a convoy of five vehicles, including a Bedford five-tonner fitted out as a field laboratory (Fig.6), and returning in late February 1988.

The group of eighteen scientists and support staff, led by Cyril Walker of the BM(NH) and Dick Moody of Kingston Poly., and including Andy Currant, Angela Milner and Peter Whybrow of the BM(NH)'s Department of Palaeontology, carried out multidisciplinary research in

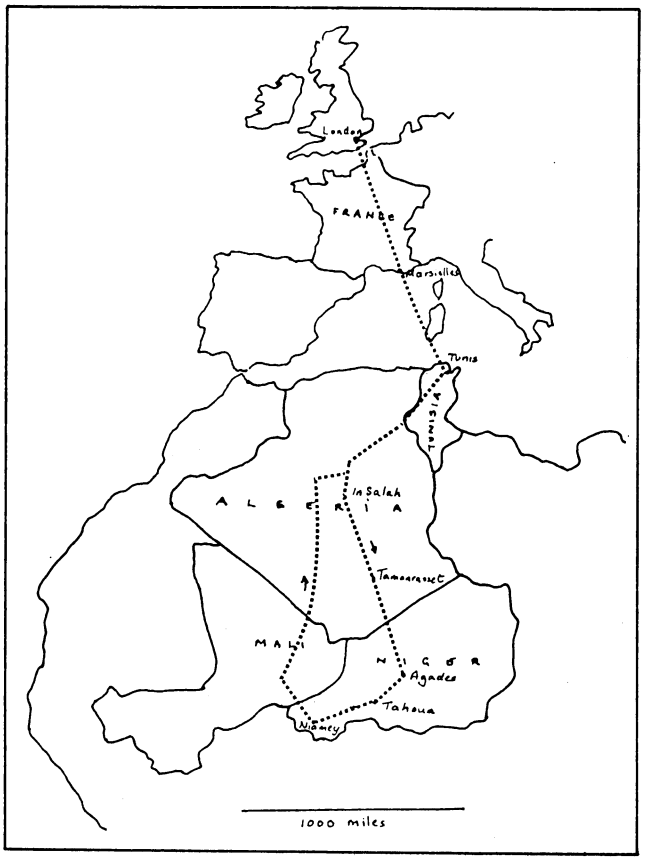



Fig.5. Sketch map of the 10,000 mile route followed by the joint BM(NH) - Kingston Polytechnic Expedition to the Sahara, 1987-1988.

Niger centred on the Tahoua and Agadez region and the Cretaceous to Eocene succession of the Iullomeden basin. Previous joint expeditions to neighbouring Mali had shown a mixture of European and South African fossils and this year's expedition attempted to answer questions about the extent and timing of the last trans-Saharan seaway, and about the Cretaceous-Tertiary boundary. Other projects included the palaeocurrents in sandstones of the Iullomeden basin, geochemistry of Quaternary volcanics of the Air Massif (Kingston Poly.), and palaeo-magnetic research (Oxford University).

An unusual feature was the presence of keen amateur collectors on the expedition, including Stephen Bankler-Jukes, who recently collected a good part of the very rare plesiosaur Colymbosaurus (now at Dorset County Museum) and who is usually an archaeologist and film-producer (Jamaica Inn and the forthcoming Dinosaur ... the movie), and David Ward, a London vet, known for his work on extracting small vertebrates from soft sediments.

Discoveries included skull bones of a Lower Cretaceous freshwater coelacanth, hitherto known only from scraps, showing it to be closely similar to coelacanths of the same age from Brazil. This supports the idea that Africa and South America could then only have been separated by the narrowest of seas. Fossils, turtles, crocodiles, and the first

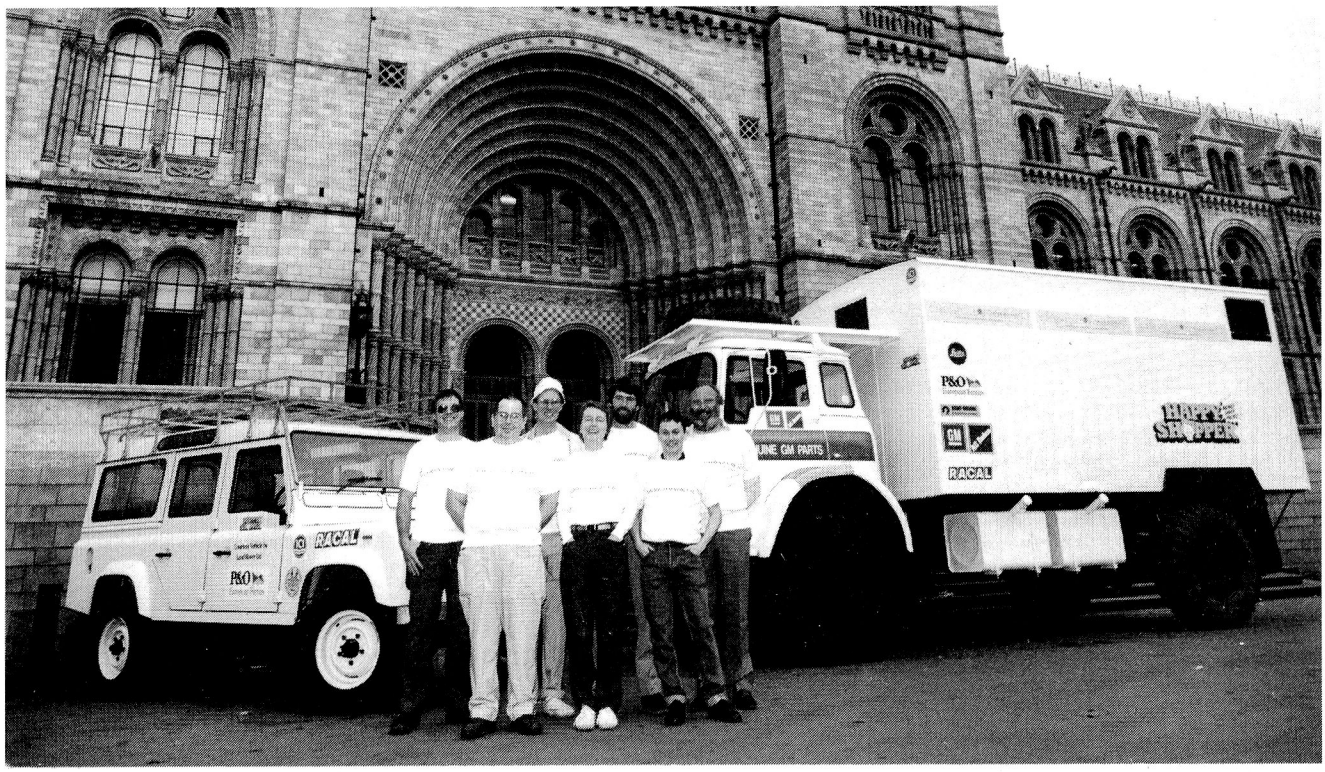



Fig.6. BEFORE .... Members of the joint BM(NH) - Kingston Polytechnic Expedition to the Sahara, 1987-1988; the 'Happy Shopper' with their expedition vehicles before departure on 20 December 1987. Copyright BM(NH)

Fig.7. AFTER .... Learning from a knowledgeable looking group of enthusiasts just what it is they brought back from the Sahara are (right to left) Cyril Walker (Co-leader of the Expedition), Andy Currant and Angela Milner. The children confirmed that it is, as suspected by the BM(NH), the thigh-bone of a new sauropod dinosaur. Copyright BM(NH).

mosasaur from that region of Africa were also collected. The most spectacular discovery was a Lower Cretaceous 'dinosaur graveyard' of about two square kilometres that contained the remains of about twenty large plant-eating dinosaurs; some were well preserved but others had been reduced to heaps of tiny fragments by natural weathering under harsh desert conditions. Some bones were preserved in 'log-jams', suggesting that the dinosaur carcases had broken up and been deposited by flood water. The teeth of meat-eating dinosaurs were associated with the bones, suggesting that the remains may have been scavenged by carnivores.

The Museum team worked for nearly three weeks, in difficult and unpleasant conditions where severe dust storms were an almost daily hazard, to excavate more than a hundred large bones (Fig.7). These are the first definite remains from Africa of the camarasaurs, a family of sauropods known previously only from North America and China. Sir David Attenborough and a crew from the BBC's Bristol-based Natural History Unit joined the expedition to film the excavation for a forthcoming television series on fossils ('Lost Worlds', to be broadcast in 1989).

The British Museum (Natural History) and Kingston Polytechnic were most grateful for the help and friendly cooperation afforded to the expedition by the Ministry of Mines and Energy, Government of the Republic of Niger, and the Geology Department of the University of Niamey, Republic of Niger.

Appropriately for the new era at the BM(NH), the expedition was funded by £30,000 from the BM(NH) and the National Advisory Board - Public Sector Higher Education (which funds polytechnics), and by some £20,000 in kind from a number of commercial sponsors, principally ICI, Nurdin and Peacock, and Land Rover, as well as several others (some of whose logos can be seen on the expedition members and their vehicles on Fig.6.

## STONE CENTRE PROPOSALS RELEASED

The National Stone Centre has released proposals on 22 April 1988 for the initial phases of development. The first stage is to cost £0.5 million, half of which will be spent on site works and landscaping as part of a grant-aided Derelict Land Reclamation Scheme of the 50 acre site at Wirksworth, Derbyshire. The remainder will involve the visitor building, exhibitions and site interpretation.

The Centre, an educational charity, will tell the 'Story of Stone', from prehistoric times to hi-tech processing and from sculptures and crafted architectural work to the 220 million tonnes of stone quarried annually for roads, concrete, steel, glass and chemicals.

Detailed site investigations are now underway so that work on site can begin in mid-1988. The building is due to be finished early in 1989 and fitting-out with displays will follow. At the same time, the access roads, parking areas, external exhibits, landscaping and other work are scheduled to enable the Centre to open for visitors in the main 1989 season.

The task of raising £0.25 million has begun. Grants from the main government funding

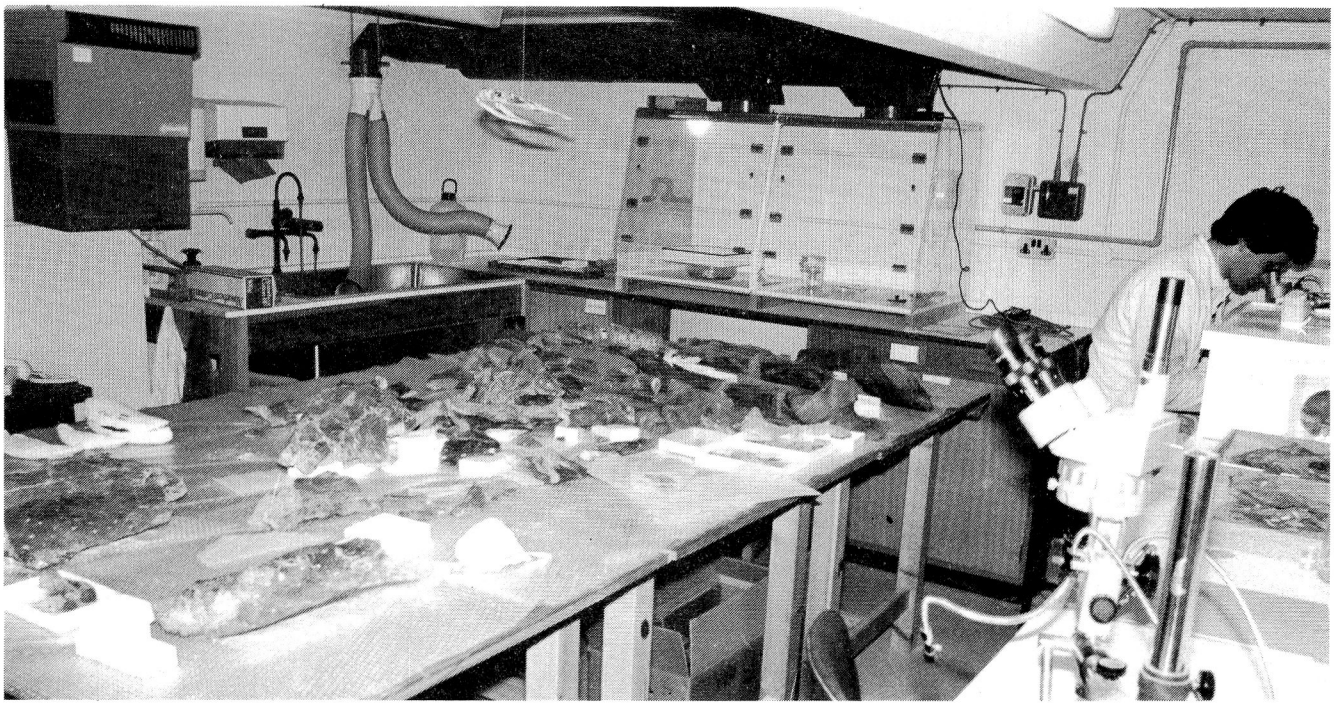


Fig.8. David Hill (Bristol's Assistant Geologist, responsible for specimen preparation and conservation) at work in the Geology Section's new Conservation Laboratory, preparing a 150-million-years-old pliosaur skull for display in 'The Great Sea Dragons' exhibition at Bristol Museum, February - May 1989. Copyright City of Bristol Museum and Art Gallery.

bodies will need to be matched by financial suport from a range of concerns, including quarry operators, suppliers and customers, together with the major educational, scientific and environmental trusts. Early responses are encouring.

A careful programme of consultations with local people, involving exhibitions, public meetings and site tours, has generated widespread support and no significant objections. Many offers to assist have been received and a volunteers group is being set-up to work alongside staff. Ian Thomas, Project Coordinator, would also like to hear from anyone who knows of old equipment, photographs or books and from people generally interested in the history of the industry. Contact him at National Stone Centre, Ravenstor Road, Wirksworth, Derbyshire DE4 4FR (Tel. 0629 82 4833).

## NEW GEOLOGY CONSERVATION LABORATORY FOR BRISTOL

Peter Crowther (Curator of Geology, City of Bristol Museum and Art Gallery) writes:

'Professor Brian Morris (Chairman, Museums and Galleries Commission) opened Bristol Museum's new Geology Conservation Laboratory on Wednesday 20 April 1988.

This facility (Fig.8) is the first of its kind in the West of England and will not only service Bristol's vast geological collections (some 500,000 fossils, minerals and rocks), but provide a much needed regional focus for professional geology specimen conservation. In the immediate future, it will enable preparation of a 150 million-years-old pliosaur skull from the Kimmeridge Clay at Westbury, Wiltshire, to be completed in good time for the Museum's exhibition, 'The Great Sea Dragons', February - May 1989.

The £10,000 conversion work was made possible by a generous grant of £6,000 from the MGC's 1987-1988 Conservation Capital Grant Scheme, while the Geology Section's post of Assistant Geologist is also being subsidised by the MGC (through the Area Museum Council for the South West) to employ a specialist conservator until at least Spring 1989.

At the opening Professor Morris stressed the importance of MGC's role in promoting the development of such facilities and the difficulties in attracting outside funding to cover such vital but 'behind the scenes' work as specimen conservation.'

## SUPPLIES OF THE GEOLOGICAL COLUMN LEAFLET

Alan Warhurst (Director, The Manchester Museum, The University, Manchester M13 9PL) writes:

'Richard Bates Ltd, Art Printers, went into liquidation on Friday 11 March 1988. Their stock of the leaflet, of which they are sole printers and publishers, is likely to be unavailable for a protracted period, certainly of several months. Both the Manchester Museum and the Museum Shop, Concourse Enterprises, have limited stocks of the leaflet. Please re-direct any orders to us and we shall be glad to help as far as we can, selling on the same basis as Richard Bates. The current (sixth) edition of the leaflet is unlikely to be revised within the next two or three years. However, the author, Dr R.M.C. Eagar, can be most quickly reached at 23 High Bond End, Knaresborough, North Yorks. HG5 9BT. He will be glad to answer further written enquiries about the leaflet and its supply.'

# THE GEOLOGICAL CURATOR

## PUBLICATION SCHEME

Three issues of the Geological Curator are published each year; a complete volume consists of nine issues (covering three years) and an index. Because of recent delays in publishing, 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 margin. 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 299771). 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 can be purchased at cost (details from the Editor). 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 Michael Taylor, Leicestershire Museums, Art Galleries and Records Service, 96 New Walk, Leicester LE1 6TD (Tel. 0533 554100).

NOTES AND NEWS contains short pieces of topical interest. Please send contributions to Michael Taylor, Leicestershire Museums, Art Galleries and Records Service, 96 New Walk, Leicester LE1 6TD (Tel. 0533 554100).

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, Art Galleries and Records Service, 96 New Walk, Leicester LE1 6TD (Tel. 0522 554100).

BOOK REVIEWS contains informed opinion of 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

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Further details from Diana Smith, Curator, Bath Geological Museum, 18 Queen Square, Bath BA1 2HP

Inserts such as publishers' 'flyers' can be mailed with issues of the Geological Curator for a fee of £50. 550 copies of any insert should be sent to Christopher Collins, Leicestershire Museums, Arts and Records Service, 96 New Walk, Leicester LE1 6TD.

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

## BACKNUMBERS

Backnumbers of the Geological Curator (and its predecessor, the Newsletter of the Geological Curators' Group) are available at £2.50 each (£5.25 for the double-issues 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).