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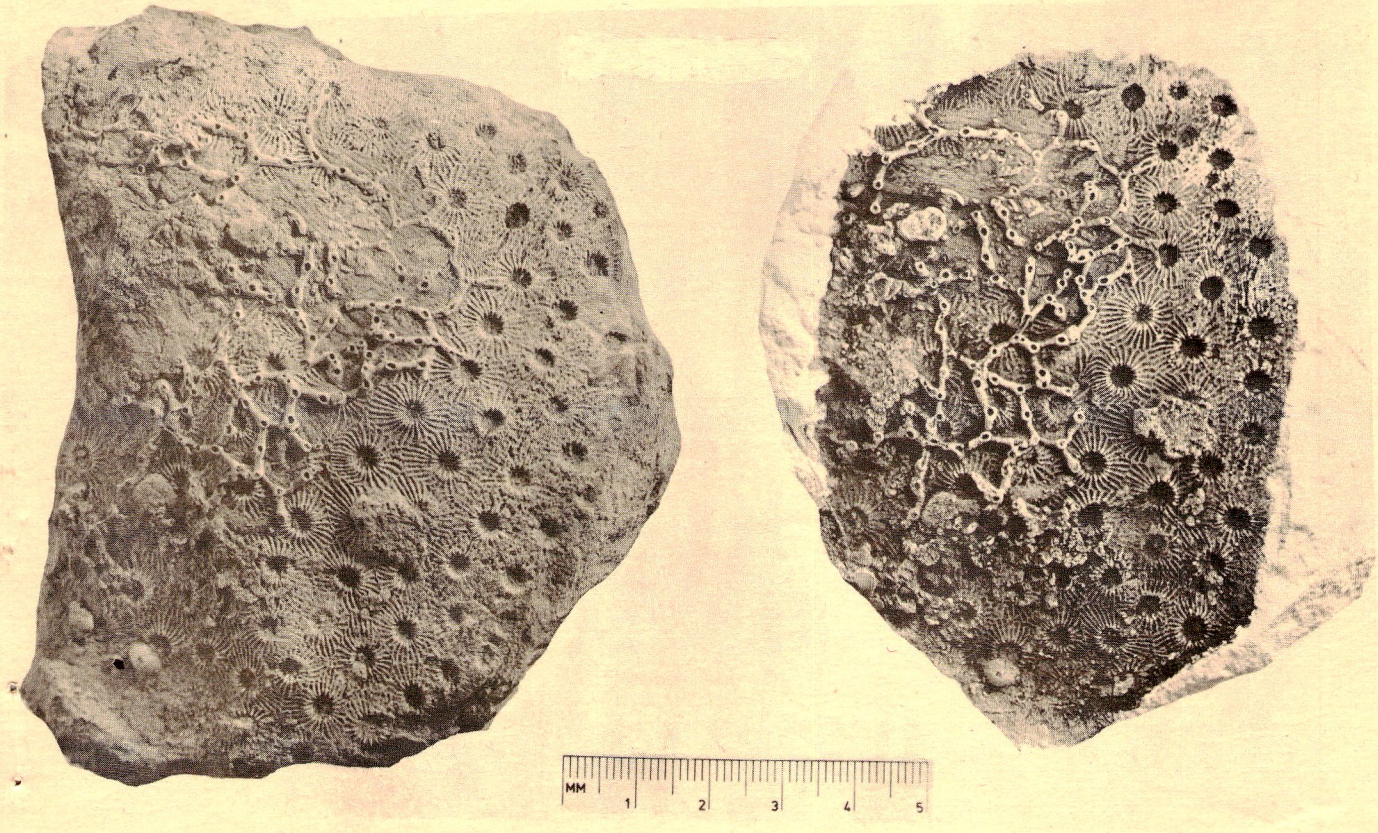

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AN OLD COMPLAINT

The difficulty there is in getting information regarding museum catalogues will scarcely be credited. As a rule, I ask in every museum I visit whether there is a catalogue or handbook. In very many cases the answer is in the negative. I have been so told repeatedly when I was already in possession of the catalogue. The explanation I found to be that if the catalogue or handbook is out of print it is treated not only as non-existant, but as if it had never existed. Having been unable to get information regarding a certain catalogue I wrote to the Museum for a copy of the title page. I had no reply. In answer to a further application I received this: "We certainly have a small Museum, but have lost all trace of our catalogue since the death of Mr.....in...., who then was the Curator." Librarians again seem to take little interest in catalogues of museums, except in the case of Art collections, and do not collect them systematically. I have not found in any library, at home or abroad, anything like a complete collection of the published works relating to the museums in the same town. The British Museum possesses far more works on museums in general than any other library with which I am acquainted, but it has not a complete collection of the works relating to itself. I asked in a University museum whether there was a catalogue. I was told that there was not and that there never had been a catalogue. I then went to the University Library and examined the catalogue of the library, which is on the card system and is kept up-to-date. The library did not contain a single volume relating to the museum. A printed catalogue of the museum nevertheless exists. In another University Library I went over the catalogue to ascertain what had been published in reference to the museums in the town, and found several entries. The University possesses an excellent museum; but the library had nothing relating to it; and the librarian told me that he did not think that the museum had issued a catalogue. I walked over to the museum, purchased the catalogue, and brought it back to the library. The librarian promised to make a note of it. In a third library, presided over by one of the leading exponents of the art of cataloguing, I found that the title "Museum" did not exist in his own catalogue, and that the library did not possess a copy of a "Visitors' Guide" to a well-known museum in the neighbourhood, of which there had been at least two editions.

An extract from Vol I of D. Murray, Museums, their History and their Use. (3 Vols. Glasgow, 1904).

GEOLOGICAL COLLECTIONS AND COLLECTORS OF NOTE

7. SOME BIOGRAPHIC AND BIBLIOGRAPHIC NOTES ON J. W. ELWES (?1850-?1890)

(i) Introduction

Two recent accounts of geological collections and collectors represented in the Yorkshire Museum (Pyrah, 1974; Torrens, 1974) have made mention of J. W. Elwes, a Hampshire geologist and antiquarian whose life and work are of some interest to us. We have encountered some problems in locating biographic material, but feel that it may be constructive to give a brief account of the information we have been able to gather so far.

(ii) Notes on Elwes's work and collections

Elwes's name appears in the membership lists of the Hampshire Field Club & Archaeological Society (as published in their Proceedings from the first issue (1887) until 1890. During this period his address is given as Otterbourne, a small village to the south of Winchester. We have been unable to trace any obituary notice in these Proceedings.

At Otterbourne Elwes kept "A very complete collection of fossils from the Hampshire Tertiaries." (Dale, 1888). It appears that it was this collection that was acquired by William Reed (1810-1892), described (Anon. 1892) as "A large collection of Eocene fossils in a beautiful state of preservation, in which the several subdivisions of the deposits of that period in England are fully represented." The name Elwes is not, incidentally, mentioned in this account. This collection subsequently passed to the Yorkshire Museum. Reference is also made (Woodward, 1904:286) to a donation of London Clay fossils from Fareham to the British Museum (Natural History) in 1890. This wholesale disposal of collections in 1890 is interesting and may be significant, particularly in view of the fact that we have been unable to find any reference to Elwes after that date.

It is apparent from Elwes's published work that he collaborated in the field with many workers. Consequently we may expect to find material collected by, or with, him in many collections.

The 1887 work on Brook Common, Bramshaw (= Bramshore), in the New Forest, was carried out in conjunction with T. W. Shore (1840-1905), H. Keeping (1827-1924) and D. Flynn (fl. 1887-1891). Material was "shared by the Hartley and Manchester Museums, and certain private collectors." (Elwes, 1887:19).

In 1888, Elwes described a diagram exhibited in the Hartley Institute, illustrating the sections on the Fareham-Netley railway which had been excavated about 1887 (White 1913). The most significant cutting, near Fareham, was first examined by W. Whitaker (1836-1925) and T. W. Shore; "Mr. Keeping soon after made considerable collections of fossils ..." (Elwes, 1883:32), these included a new species of Terebratula, T. hantoniensis Muir-Wood (1933). Specimens of this species were presented by the Council of the Hartley Institution to the British Museum (Natural History) (Elwes, 1883:34). Elwes also makes mention (1883:31) of collections made by Keeping at a nearby brick-pit, blocks with Pectunculus being "distributed to many museums."

Palaeontological notes on these sections were published in a subsequent paper (Elwes, 1890), in which Elwes implies he has made a collection of material from Fareham. ("Mr. H. Keeping has also been so good as to add the names of several (species) of which the author was unable to secure specimens.") In this paper Elwes also mentions a collection "from Crowd Hill, near Bishopstoke, was made by Mr. Rhodes, of the Geological Survey, and the author" (loc. cit. p. 80). (In this paper T. hantoniensis was recorded as T. bisinuata Lmk.)

The paper by Shore & Elwes (1889) on Southampton docks contains detailed faunal lists based on "collections in the Hartley Museum, and in the possession of Mr. J. T. Kemp, M.A., and Mr. Elwes." (loc. cit. p. 48). Professor Hodson of Southampton University (the precursor of which was the Hartley Institute) informs us that the geological collections suffered greatly in the last war and that it is no longer possible to recognise any of Elwes's material there.

Although Winchester City Museum possesses a large collection of Elwes's flint implements, some of which were transferred to Bournemouth, he published no account of them in the Proceedings of the Hampshire Field Club. His only geological material here, a single piece of silicified wood in flint, from Tunworth, near Basingstoke, dated 1820, was transferred to Portsmouth City Museum in 1950 (NO. G3.2550).

(iii) Biographic notes

Dr. Hugh Torrens has suggested (in litt. March 1975) that J. W. Elwes is John William Elwes, born at Southsea, May 16th 1850, son of William Elwes. He attended University College School, London, and was admitted to Christ's College, Cambridge, on June 12th 1871, but did not take up residence because of ill health (Venn & Venn, 1922; Peile, 1910). William Elwes was resident at a number of addresses on Portsea Island between 1852 and 1859 (Trade directories; Portsea Island), but a search of the surviving parish registers failed to bring to light any record of John Williams Elwes' birth. One of the more likely registers, that of S. Paul's Parish, in which William was residing in 1852, was, however, destroyed by enemy action in the last war.

After the admission of John William Elwes to Cambridge in 1871 nothing more is heard until 1887 when J. W. Elwes, the geologist, became a member of the Hampshire Field Club, and was resident in Otterbourne (see 2 supra). Directories for Winchester (which include Otterbourne) 1884-1890, do not list anyone of the name of Elwes.

It might be inferred from his absence in the Hampshire Field Club membership lists and the dispersal of his collections c. 1890, that he died about this time. On the other hand, taken in conjunction with the absence of an obituary notice in the Field Club's Proceedings, it may be significant that there is no record of the burial of anyone of the name of Elwes in Otterbourne Parish between 1889 and 1897 (County Record Office, Winchester), suggesting that he may simply have moved out of the district.

If J. W. Elwes died in 1890, and if he had been born in 1850, his early death would be consistent with the known ill-health of John William Elwes. But one must bear in mind the fact that J. W. Elwes was an active field geologist and that John William Elwes was in such a state of health as to have been unable to attend Christ's College, Cambridge.

It would be a comparatively easy task to search the civil records kept at Somerset House and prove the identity, or otherwise, of J. W. Elwes b. 1850 and J. W. Elwes d. circa 1890, but we have had to defer this task because of the pressure of other work.

(iv) Biographic notes on geologists mentioned in Elwes's published works

D. Flynn (fl. 1887-1891). His address during the period 1887-8 is given in the membership list of the Hampshire Field Club (as published in their Proceedings) as Coast Guard Station, Barton, Christchurch, and from 1889-1891 as Jury's Gap, Rye, Sussex.

H. Keeping (1827-1924). He was the son of a New Forest farmer and woodman. He lived in the Isle of Wight for a period, earning his living collecting and selling fossils. In 1864 he was appointed curator of the Woodwardian Museum, Cambridge, and retired in 1911.

See autobiographies, Keeping s.d. (?1911); s.d. (?1921), and Obituary (Anon.1924).

J. T. Kemp (fl. 1888-1898). Kemp's name appears in the membership list of the Hampshire Field Club for the first time in 1888, and from then until 1898 his address was given as Elmfield, Romsey. In 1898 he is listed at an address in Bristol. He resigned from the Field Club the same year. He published an account of the tufaceous deposits of the Test and Itchen in 1889.

Mr. Rhodes. Almost certainly John Rhodes 1852-1935, collector for the Geological Survey from 1881 until he retired in 1918. (Flett, 1937).

W. Whitaker, F.R.S., F.G.S. (1836-1925). Appointed to the Geological Survey in 1847, served until 1896. President, Geological Society of London 1898-1900, elected F.R.S. 1887, and served on their Council.

He lived in Southampton for many years, and was, with T. W. Shore, one of the prime movers in the formation of the Hampshire Field Club (Colenutt, 1944) and was its president 1888-1890. His private geological collection, kept at his house in East Park Terrace, Southampton, was described as a "collection of rocks and minerals chiefly from the London basin." (Date, 1888). In 1898 he moved from Southampton to Croydon, and appears to have resigned from the Field Club the following year, his name being missing from their membership list. See Anon., 1887; A.S., 1925; Sheppard, 1925.

(v) Acknowledgements

We wish to thank Dr. H. Torrens (Keele University), Miss Sarah Peacock (City Archives, Portsmouth) and the Hampshire County Record Office (Winchester) for their help in preparing this account.

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GEOLOGICAL COLLECTIONS AND COLLECTORS OF NOTE

8. AN HISTORICAL ACCOUNT OF THE PALAEONTOLOGICAL COLLECTIONS FORMED BY R. W. HOOLEY (1865-1923)

I. THE LIFE AND WORK OF R. W. HOOLEY (1865-1923)

Reginald Walter Hooley was born in Southampton on 5th September, 1865. His father, William Hooley, was a gentleman of independent means; his mother, the youngest daughter of Mr. and Mrs. J. Earle of St. Giles Hill, Winchester.

As a youngster in Southampton he appears to have been interested in geology, and was doubtless influenced by his contact with T. W. Shore (1840-1905), an enthusiastic naturalist and antiquarian, who was one of the prime movers in the formation of the Hampshire Field Club & Archaeological Society, and Executive Officer of the Hartley Institution, precursor of Southampton University, from 1875 to 1895. (Colenutt, 1944; Minns, 1908; Patterson, 1962).

In 1889 Hooley took up employment with Godrich & Petman, well-known wine and spirit merchants of Parchment Street, Winchester and at the time of his death was their managing director.

Soon after he began work in Winchester, Hooley's name appears in the membership list of the Hampshire Field Club and Archaeological Society (as published in their Proceedings). From 1890-1892 his address is given as Fir Grove, St. Denys, and from 1893 until his marriage to Miss E. E. Holden of Southampton in 1912, he lived at Ashton Lodge, Belmont Road, Portswood. He and his wife then took up residence at Earlscroft, Stratton Road, St. Giles Hill, Winchester. In 1918 he succeeded N.C.H. Nisbett as local Honorary Secretary of the Hampshire Field Club. Hooley was apparently also one of the founder members of the Isle of Wight Natural History and Archaeological Society.

In 1913 Hooley was elected to Winchester City Council, a position he held for several years, during which time he took an active interest in public libraries and museums. He was later (1918-1923) to be Honorary Curator of the Winchester Museum, where he "initiated the present arrangement of the collections, although much of the lay-out in detail was done by his successors." (Cottrill, 1947).

Although this account is concerned primarily with Hooley's geological accomplishments, it should be noted that he was also an active and enthusiastic archaeologist. Crawford (1925:435) commented

"He recognised the need of scientific methods in archaeology, and he took infinite pains to acquire skill in his new field of activity."

We have, however, decided to omit Hooley's archaeological publications from the bibliography of his published works included with the list of references.

To the best of our knowledge, Hooley's first geological paper was published in 1900, in which he described a new species of Plesiochelys, P. vectensis. The description of a second new species, Nicoria headonensis was published in 1905. He had considerable success with this group and recorded (1907b:96) that he had recently obtained "three more shells of Plesiochelys, all exhibiting both carapace and plastron ..." and commented "I am in the process of working them out, and at a later date hope to show that at least two, if not new species, are strong varieties." Such an account does not, however, appear to have been published.

In 1889 Hooley discovered what he described (1907b:98) as "the largest portion of the skeleton of Iguanodon bernissartensis yet found in England in Brighstone Bay". It consisted of "ribs, the sacrum, pubis, ilium, ischium, femur, twenty vertebrae, and portions of other bones. Some of these I dug out of the cliff and others from the debris of a fall of the cliff ... Those lying in the cliff were perfect, and many of the vertebrae were in their natural position, with their neural and haemal spines and processes entire ... It took three days to get all the bones out." (Hooley, 1907b:98-99).

It is clear that Hooley is here referring to the specimen which he later described (1911, 1912) as Iguanodon mantelli, of which he remarked "Although many rolled and odd bones and teeth have been found, the present is the largest number of associated remains of Iguanodon yet found in the Isle of Wight".

Hooley's most spectacular dinosaur was obtained from the Wealden Shales of Brighstone Bay in 1914 and described as Iguanodon bernissartensis (1917) but renamed Iguanodon atherfieldensis in 1925. This specimen had been obtained from the Wealden Shales of Atherfield, Isle of Wight "after a fall of the cliff ... The complete skeleton was probably present when in situ, and the missing portions were carried away by the heavy seas ... When its discovery was announced in 1917, the disarticulated bones of the skull were lying scattered among the bones of the body and limbs in many blocks of the matrix. The unfused condition of the elements of the skull proved the skeleton to be that of a young individual, and as, notwithstanding this fact, there were six ancylosed vertebrae in the sacrum, it was identified as a specimen of Iguanodon bernissartensis, and the portion of their integument found was described as belonging to that species. The study of the bones after they had been cleared of the matrix and restored, has, however, proved the fossil to belong to a new species, and hereafter it will be designated Iguanodon atherfieldensis." (Hooley, 1925:1, 3).

The study of the integument mentioned in the above passage was published

in 1917, along with that of a specimen of Mososaurus becklesii. The latter was recovered by S. H. Beckles (1814-1890) from the Wealden of Hastings, and purchased from his executor in 1891 by the British Museum (Natural History) with most of the Wealden and general collection, some material being purchased by the Brassey Institute, Hastings (now Hastings Museum).

The almost complete specimen of Iguanodon atherfieldensis collected by Hooley was put on display in the Dinosaur Gallery of the British Museum (Natural History) in 1933 (Swinton, 1933) and can still be seen there. It is figured in Swinton's 'handbooks' (Swinton, 1934 pl. V, p. 43 and 1965 pl. 16, opp. p. 104).

Of the remains of Hylaeosaurus, Hooley (1907b: 100) recorded only a single sacrum of his collection, and none at all of Hypsilophodon foxi or Polacanthus foxi, although he had repeatedly searched the horizon from which Fox's material had been derived. But White, writing some years later (1921:15), commented "Remains of (Hypsilophodon foxi) have been found by Mr. R. H. Hooley in the Marls a little below the Hypsilophodon Bed in Brixton Bay, but not in the Shales above." An entire skeleton and Hooley's collection can be seen in the Dinosaur Gallery of the British Museum (Natural History), (Swinton, 1936).

In the late autumn of 1904 a local fisherman collected a block containing crocodile remains (Goniopholis crassidens) from a cliff-fall at 'Tie Pits' near Atherfield Point. This was sent to H. Keeping (1827-1924) at the Sedgwick Museum, Cambridge, but was later handed over to Hooley by Prof. T. McK. Hughes. Hooley subsequently spent much time and went to considerable trouble and expense collecting more material. The nearly complete skeleton took Hooley almost two years to recover. He recorded the circumstances (1907b:101) in some detail; "In the late autumn of 1904 a huge mass of cliff at Atherfield ... sank. Gradually subsiding, it forced its foot across the beach until it reached the water-line, where it suffered rapid denudation by the sea. In conjunction with Mr. Walter White, the coxwain of the Atherfield Life Boat, I watched this continuously, and obtained a block of rock containing crocodile bones and scutes ... Fragments of crocodile bones and fish vertebrae now and again were washed ashore. No greater reward was vouchsafed until Whitsuntide of 1905, when a series of very heavy 'ground seas' completely removed the foot of the 'founder' ... blocks were cast up on to the beach ... belonging to a different individual from that previously discovered. No further block was found until August 1905, when rough seas washed ashore two pieces, which being fitted together, formed a section of crocodile skull. Shortly afterwards the snout, minus the extreme end of the upper jaw, and one or two smaller parts of the cranium were removed. In the middle of September, 1905 ... a rock containing the whole of the skull behind the orbits, became visible ... The gathering in of this unique specimen from the sea necessitated much time, energy, and expense, but the reward has been great, for our knowledge of the osteology of this crocodile is now almost complete, and the joy of the hunt and the discovery has been intense."

It was this specimen that Swinton (1934:26) was later to describe as "the finest specimen" of this genus known. At that time it was on display in the gallery at the National History Museum. It was the subject of a paper by Hooley, 1907a.

Remains of Ornithodesmus latidens Seeley from a fall of Wealden Shales at Atherfield Point in 1904, the same fall that yielded the skeleton of Goniopholis crassidens, were described by Hooley in 1913. In this paper he described, in addition to the remains of the two individuals he had collected, material from the collection of the Rev. W. Fox (1813-1881), commenting that "we have sufficient material to restore the almost complete skeleton of this reptile". Indeed he was able to estimate the wing span of this pterosaurian as about 16 feet.

(The Rev. William Fox, curate of Brighstone, Isle of Wight 1862-1867 and of Kingston from 1874, formed a large and important collection of vertebrate material from the Atherfield-Brook area, but allowed few people to examine his specimens while they were in his care. His sole publication was a note on Polecanthus in the "Illustrated London News", 1863, although he intended to describe another form. T. H. Huxley, H. G. Seeley, J. W. Hulke and Sir R. Owen subsequently founded a number of new species on specimens from this collection, which was purchased by the British Museum (Natural History) in 1882 (Woodward, 1904). He was no relation to the Rev. William Darwin Fox, Rector of Delamere, Cheshire, the second cousin of Charles Darwin, who was responsible for introducing Darwin to Henslow, and who retired to Sandown in 1870 where he died in 1880 (Poole, 1936, Swinton, 1936a).

II. THE FATE OF HOOLEY'S PALAEONTOLOGICAL COLLECTIONS

(a) Collections in the City Museum, Winchester.

During the period that Hooley was Honorary Curator of the Winchester Museum it appears that his palaeontological collections, excluding the vertebrate material, were on loan to the Museum, and much, if not all of it, actually on display.

"Mr. Hooley's intention of giving his geological collections to the City Museum - which also benefited from his researches in archaeology - was carried out by Mrs. Hooley."

It is not clear whether he intended the whole of his collection to be donated, or simply that the museum should retain the invertebrate collections which it already had on loan. Hooley had from time to time sold or donated material to the British Museum (Natural History), and the bulk of the collection was sold to the Trustees by his wife in 1924, but more of this later.

The collections remaining in Winchester consist of a small collection of vertebrate material, a small but comprehensive collection of invertebrate fossils, mainly from the Winchester area, and a good collection from the Insect Limestone of the Isle of Wight.

(b) Collections in Portsmouth City Museums

All the Hooley material now in Portsmouth City Museums was transferred from

Winchester in 1950. This material was incorporated in the general collection, and only a few of the seventeen Hooley specimens from Winchester can now be identified. The material included specimens from the artesian well sunk on Southampton Common, Portsmouth dockyard, and Old Portswood (Southampton).

(c) British Museum (Natural History)

As we have already mentioned, the bulk of Hooley's vertebrate material had been purchased from Mrs. Hooley by the Trustees of the British Museum (Natural History) in 1924. In fact the Natural History Museum had acquired material from Hooley at various dates before that. The volume of material involved is large, and prevents full details being given here, but a brief sketch may be of some interest. The earliest record of material being donated to the museum appears to be the gift, in 1904, of material from the Electric Light Works site in Southampton. This was followed by several other smaller donations or sales. For example, the Goniopholis crassidens and Ornithodeomus latidens from the cliff fall at Atherfield in 1904, were purchased by the museum in 1911 for £250.

The bulk of his collection, some 130 reptile specimens, a small number of mammal remains from the Bembridge Marls, about 1200 specimens of insects from Gurnard Bay, and a large collection of fish remains, was sold to the museum by Mrs. Hooley in 1924 for £500. (M. Holloway in litt.)

III. THE A'COURT SMITH COLLECTION

In 1900 Hooley purchased a collection of fossils from the Oligocene 'Insect Limestone' of Gurnard and Thorness Bays near Cowes, Isle of Wight, at a Southampton auction. This was part of the collection made by J. E. E. A'Court Smith (1814-1900).

James Edwin Ely A'Court Smith retired to Gurnard in 1859 after a lifetime's service in the mercantile marine. He began his career as a midshipman in the service of the Honourable East India Company, and retired a chief officer with a Master Mariner's certificate.

After settling at Gurnard, A'Court Smith "spent his leisure in the study of the geology of the neighbourhood" (Reid & Chandler, 1926:1). He met with considerable success, and "quickly discovered the now famous Insect Bed." (Jackson, 1933:213). For many years he worked patiently, labouriously collecting large blocks to be taken home, broken up and studied at leisure. It would be very easy to underestimate the care and patience shown by A'Court Smith since the 'Insect Limestone' is for the greater part barren and the fossil remains restricted to pods. A'Court Smith thought it likely that he had worked out the most fruitful areas at Gurnard Ledge, and Saltmead Ledge, Thorness Bay; but another amateur geologist, G.W. Colenutt (1872-1944), whose work is the subject of an account being prepared by the present authors, was later to find another rich deposit. (Colenutt, 1933).

Reid & Chandler (1926:3) emphasised the difficulties; "The Insect Limestone forms a well marked horizon of flat, discontinuous lenticles from 1 inch to 1 foot thick, a few feet above the Bembridge Limestone proper. It can be seen in the cliff section in Gurnard Bay, but westwards is gradually brought down to shore level by the dip, so that in Thorness Bay its outcrop is on the foreshore ... The great bulk of the Insect Limestone is barren, as both plants and insects occur in pockets. On a visit to the coast, in the summer of 1925 we found no fossiliferous pockets in situ although we traced the barren limestone along the whole exposure ...

As rich pockets are sparse, it is singularly fortunate that a man with such a keen perception as A'Court Smith should have been able to devote at least twenty years to patient collection from this exposure".

During his lifetime A'Court Smith sold material to the British Museum (Natural History):

"In 1877 the British Museum purchased '280 specimens of Plants, Mollusca, Crustacea, and Insects' from A'Court Smith. Nearly a hundred were registered as plants, but some of these have since been transferred to the Insect collection, as their plant remains were unimportant. In the following year 125 plants were purchased; some of these were inferior or worthless specimens which have not been catalogued. A further purchase of 1883 of 'a series of 311 selected specimens of Plant, Insect, Crustacean and Fish Remains' did not include many plants." (Reid & Chandler, 1926:1).

The main collection was, however, retained by A'Court Smith. This had been offered to the British Museum, "but was refused because the price was considered excessive." (Reid & Chandler loc. cit.)

Reid & Chandler (1926:1-2) outlined some of the history of the main collection after its rejection by the British Museum. Some material apparently found its way into the Sedgwick Museum, Cambridge. They cite as an example specimens of Doliostrobus sternbergii Goeppert which were figured by Gardner, 1886 pl. xxii, figs. 1, 2. (The specimen of Pinus dixoni (Bowerbank) Gardner & Etlingshausen which was figured by them, 1884 pl. xiii, fig. 4, and noted as being "in the possession of Mr. J. A'Court Smith", was not located by Reid & Chandler, (1926:54). The other specimens of Doliostrobus sternbergii Goeppert, now Araucarites gurnardi Florin in Reid & Chandler, figured by Gardner 1886, pl. xxiii, described as "In the Collection of Mr. E. A'Court Smith" do not seem to be mentioned in Reid & Chandler's account (1926:48-53) of this species, and were presumably not located by them either). They also mention material in the Museum of Practical Geology, Jermyn Street, but specific examples do not appear to be cited anywhere in the text.

Some of the material from the main A'Court Smith collection also found its way into the collection of P. B. Brodie (1815-1897) by gift from, and exchange with, A'Court Smith. (Brodie 1878).

Brodie's general collection was acquired by the British Museum (Natural History) in 1895 (some smaller donations had been made before this date) but he retained the fossil insect collection. This was not to be acquired (by purchase) by the British Museum until 1895, a year after his death.

A'Court Smith died in 1900 and "like many others before and since, unwisely failed to make provision for the security of his unique collection and after his death ...it was sent to a Southampton auction room, where by great good fortune it was seen by a keen Geologist, R. G. Hooley (sic) of Winchester, who purchased it for a few shillings and thus saved it from probable dispersal or destruction." (Jackson, 1933:213-214).

Reid and Chandler began their work on the Bembridge flora early in 1923, and "received about 650 selected specimens from Mr. Hooley. Later, he sent the whole collection, amounting to between 3000 and 4000 rock fragments. Many of these showed merely the very poor impressions of shreds of vegetation, and were valueless." (Reid & Chandler, 1926:2).

Since Woodward (1877, 1878, 1879) first recognised the importance of the fossil remains, a considerable number of papers have been written on the Insect Limestone and its flora and fauna. It is, however, worth recording here that among the fossil taxa commemorating R. W. Hooley is a genus found in the Insect Limestone, Hooleya Reid & Chandler (1926:93-5, pl. VI, figs. 7-9 named "... in honour of the late R. W. Hooley, to whom the recovery of this fine collection is due." A'Court Smith was not forgotten either. Woodward (1877) gave the name Eosphaeroma smithii to an isopod discovered by A'Court Smith in the "fine yellow marl or pipe clay, full of rootlets of aquatic plants" somewhat above the Insect Limestone, and Reid & Chandler (1926: 127) erected a new genus, Ajuginuclua, in the Labiatae, with A. smithii n. sp., as its type, named "... in honour of J. E. A'Court Smith, to whose tireless energy we owe this great collection." Cockerell (1921) also named a number of species of insects from this limestone in honour of Hooley and A'Court Smith, Tipula acourti, Plecia acourti, Systropus acourti, Psocus acourti, Rhyphus hooleyi and Livilla holleyi.

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We wish to thank Miss E. Lewis and the staff of Winchester City Museum, Mr. Bowers (Civic Record Office, Winchester), Dr. C. L. Forbes (Sedgwick Museum, Cambridge), D. J. Stewart (Portsmouth Polytechnic), and Dr. A. J. Charig and Miss M. Holloway (British Museum (Natural History)) for their help in the preparation of this account.

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TYPE, FIGURED AND CITED MATERIAL IN THE PALAEONTOLOGICAL COLLECTIONS OF THE CITY MUSEUM, PETERBOROUGH

A small number of vertebrate fossils in the collections of the City Museum, Peterborough, have been published, and it is the object of this paper to record these specimens together with the relevant data.

Type specimens

Holotypes

PISCES

LEPIDOTAE

Heterostrophus phillipsi Woodward 1928
Oxford Clay, King's Dyke, nr. Peterborough.
Purchased 1925, ex P. J. Phillips Collection.

This specimen has been transferred to the collection of the Geological Survey Museum, London, and is catalogued as G.S.M. 113113.

REPTILIA

OPHTHALMOSAURIDAE

Ophthalmosaurus monocharactus Appleby 1956
Oxford Clay, Peterborough.
History unknown.
Catalogue number: R220.

This specimen, described and figured by Appleby (1956) as P.8, is part of a young individual.

Figured specimens

PISCES

FURIDAE

Caturus porteri Rayner 1948
Oxford Clay, Peterborough.
Purchased in 1925, ex P. J. Phillips Collection.

The unnumbered specimen figured in plate 20, Rayner (1948) has been lost, although specimen F111 does show very similar properties.

REPTILIA
OPHTHALMOSAURIDAE

Ophthalmosaurus monocharactus Appleby
Oxford Clay, Peterborough.
History unknown.
Catalogue number: R220

Eight figures appeared in the original description, Appleby (1956), also appears idem (1958, plate 1) and idem (1961, p. 346). All were figured as P. 8

Ophthalmosaurus sp.

The following six specimens are from the Oxford Clay of Peterborough and have unknown histories.

1. Catalogue number: R67
   Figured in Appleby (1956, p. 420) as P.11.
2. Catalogue number: R47
   Figured in Appleby (1956, p.422) as P.5.
3. Catalogue number: R218
   Figured in Appleby (1956, p. 424) as P.6
4. Catalogue numbers: R68, R213, R218
   Figured in Appleby (1956, plate 2) and idem (1958, plate IV) as P.6.
5. Catalogue number: R219
   Figured in Appleby (1956, plate 3) as P.7.
6. Catalogue number: R217
   Figured in Appleby (1958, plate VII) as P.3.

Cited specimens

PISCES
FURIDAE

Caturus porteri Rayner
Oxford Clay, Fletton, Peterborough.
Purchased in 1925, ex P. J. Phillips Collection.
Catalogue number: F39
Cited in Rayner (1948, p. 291)

REPTILIA

OPHTHALMOSAURIDAE

Ophthalmosaurus monocharactus Appleby

Oxford Clay, Peterborough.

History unknown.

The specimens noted below appeared in the Appleby Catalogue (1958). In the standardisation of the collections they have received new numbers:

Cited as P.8 now R220 (see also Appleby, 1961, p. 343)
" " P.9 " R15, R43, R93, R221.
" " P.11 " R67, R96, R223.

Ophthalmosaurus sp.

The following specimens from the Oxford Clay of Peterborough, with unknown histories, were described in the Appleby Catalogue (1958), and are listed together with their new catalogue numbers.

P.1	R46, R215	P.17	R227
P.2	R216	P.18	R228
P.3	R217	P.20	R94, R229
P.5	R47	P.21	R230
P.6	R68, R213, R218	P.22	R231
P.7	R219	P.23	R232
P.10	R4, R222	P.24	R233
P.12	R214, R224	P.25	R234
P.13	R86, R87	P.26	Leicester Museums' 418'1956/78
P.14	R95, R225	P.27	Leicester Museums' 418'1956/68
P.16	R226		

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NEW PUBLICATION

A catalogue of the Fossil Vertebrates in the City Museum, Peterborough, Part 1, Reptiles and Fish, by T. Cross, 1975.

A catalogue incorporating many specimens of the Ophthalmosauridae has been published (Appleby, 1958), but nothing has been written on the remaining material, although a manuscript was compiled by J. B. Delair in 1970. In this work the material from the reserve collection has been brought together to provide a full list of what is available.

The systematic lists give type and figured references to a single specimen and the locality and geological horizon from which it was obtained. In the case of the fossil reptiles all of the material is from the Oxford Clay unless otherwise stated. The nature of acquisition is stated where known. In quoting references the author's name is given with the date of publication.

Published by City Museum & Art Gallery, Priestgate, Peterborough PE1 1LF.

COLLECTIONS CURRENTLY SOUGHT

Dr. Karl Waage of the Peabody Museum of Natural History, New Haven, Connecticut, who we hope will shortly become a member of the G.C.G., would like information about "lost" American collections which may have found their way to this country.

Members are reminded that information about collections should be sent initially to Dr. H. S. Torrens of the University of Keele.

MUTUAL AID

Urgently required (by exchange)
Gossans of any type from any locality. Please contact - The Editor.

CATALOGUES OF BRITISH FOSSIL VERTEBRATE COLLECTIONS

Justin Delair has been for several years in the process of producing "An Atlas of British Fossil Vertebrate Faunas" scheduled to appear in 3 vols (Caino, Meso and Palaeo). In the course of this he has worked through an enormous amount of vertebrate material in British Museum collections. To aid others he has kindly produced this list of those collections of which he has prepared typescript unpublished catalogues. They are not in alphabetical order, or in order of importance. P = part of.

Name of Collection	Pisces	Amphibia	Reptilia	Aves	Mammalia
Geological Survey: displayed and reserve	x	x	x	x	x
Geological Survey: accession books records	x	x	x	x	x
Univ. Museum, Oxford: displayed and reserve	x(P)	x(P)	x	-	x(P)
Sedgwick Museum, Cambridge: displayed	-	-	x(P)	x(P)	x(P)
" " " : reserve	-	-	x(P)	-	-
" " " : Woodward coll.	x	absent	x	absent	absent
Royal Scottish Museum: displayed	x	x	x	x	x
" " " : reserve	-	x	xx	-	-
Grant Institute, Edinburgh:	x	absent	x	absent	absent
Hunterian Museum, Glasgow: displayed	x	x	x	x	x
" " " : reserve	x(P)	x	x	x	x(P)
Kelvingrove Art Gallery & Museum	x(P)	x	x	x	x
Jordanhill College of Education, Glasgow:	x	absent	x	absent	absent
Paisley Museum & Art Gallery:	x	x	x	x	x
Dick Institute, Kilmarnock:	x	x	x	absent	x
Dumfries Burgh Museum:	x	x	x	absent	x
Dorset County Museum:	x	x	x	x	x
Bridport Museum:	x	absent	x	absent	x
Philpot Museum, Lyme Regis:	x	absent	x	x	x
Poole Museum:	x	absent	x	absent	absent
Somerset County Museum, Taunton:	x(P)	absent?	x	x	x(P)
C. & J. Clark's Museum, Street:	x	absent	x	absent	absent
Wells Museum:	x(P)	x	x	-	-
Shepton Mallet Museum:	x	absent	x	absent	absent
J. Fry's Museum, Somerdale, nr. Bath:	x	absent	x	absent	x
Exeter Museum:	x	x	x	absent?	x
Devizes Museum:	x	absent	x	x	x

Name of Collection	Pisces	Amphibia	Reptilia	Aves	Mammalia
Swindon Museum:	x	absent	x	absent	x
Salisbury Museum:		only just started.			
Alton, Hants. (Town Museum): displayed	x	absent	x	absent	x
Basingstoke Museum:	x	-	absent?	-	-
Newbury Museum:	x	absent?	x	x	x
Reading Univ. Geological Coll.	x	x	x	-	-
Reading Museum:	x(P)	absent?	x	x(P)	x(P)
Maidenhead Museum:		seen only: not listed.			
Aylesbury Museum:	x	absent	x	x	x
Radley College Museum, Abingdon:	x	absent	x	absent	x
Abingdon Museum:	x	absent	x	absent?	x
Worthing Museum:	x	absent	x	absent?	x
Caterbury City Museum:	x	absent	absent	absent	x
I.O.W. Museum (Sandown):		seen only: not listed.			
Cheltenham Museum:	x	absent?	x	x	x
Ladies College Museum, Cheltenham:	x	absent	x	absent	absent
Gloucester City Museum: displayed	x	-	x	-	x
" " " : reserve	-	-	x(P)	-	x(P)
Malvern Public Library Museum:	x	absent	x	absent	absent?
Worcester City Museum:	x	absent	x	x	x
Birmingham City Museum:	x(P)	-	x(P)	-	x(P)
Derby Museum & Art Gallery:	-	-	x	-	x(P)
Bedford Museum:	x	x	x	x	x
Leicester Art Gallery & Museum:	-	-	x(P)	-	-
Peterborough Museum:	x	absent	x	absent?	x
Northampton City Museum:	x	absent	x	-	x
Northampton Geologists' Assoc. Museum:	x	-	x	-	x(P)
Newton & Cowper Museum, Olney:	-	-	x	-	x
Norwich City (Castle) Museum: displayed:	x	-	x	x	x
Scunthorpe Borough Museum:	x	absent	x	x	x
Lincoln City Museum & Art Gallery	x	absent	x	absent?	x
Nottingham Univ. Geol. Dept. coll.	x?	-	x	-	x(P)
Nottingham City (Wollaton Park) Museum: displayed:	x	-	x	-	x
" " " reserve collection:	x	x	x	-	x(P)
York Museum:		seen only: not listed.			
Whitby Museum:	x	absent?	x	absent?	x
Colchester Museum:	x	-	x	-	x
Kettering Museum: displayed	x	-	x	-	x
Warwick County Museum:	x	x	x	absent	x
Stroud Museum:	x	absent	x	x	x

In addition to these collections, parts of collections in the geological departments at Cardiff University, Manchester City Museum, and Bristol City Museum, and Birmingham University have been seen from time to time, and some knowledge of their fossil contents is remembered.

Also, some dozen or more private collections have been examined and catalogued. This information is held too by Mr. Delair.

Work is currently proceeding, albeit rather intermittently, on the collections at Salisbury and Gloucester, and one more visit to Northampton City Museum should complete work there.

Attempts were made a few years ago to examine the large collections in Brighton Museum, but these were not accessible, and, the relevant galleries are now in process of total reorganization.

Most of the British material concerning mammals and reptiles in the BM (NH) reserve stores has been examined, and notes on that additional to the well-known Lydekker catalogues of those collections have been made. But no catalogue as such of these specimens has been made by Mr. Delair.

The three remaining specimens of the former vertebrate collection at the Royal College of Surgeons (Lincoln's Inn Fields) - ex Hunter collection destroyed in World War II - have been examined; and a large number of isolated specimens now in private hands have been seen and listed.

British specimens in some North American, French, and German collections have also been seen or photographed. These details are also kept by Mr. Delair.

Specimens in Shaftesbury, Dunrobin Castle, and Weston-super-Mare museums have been seen, but no notes were regrettably taken at the time. A general knowledge of the contents of these collections is, however, available.

We are presently liaising with curators at Honiton Museum, and museums in Portsmouth and Southampton, preparatory to visiting their collections. As yet, no firm arrangements have been made to undertake such visits, but these should nevertheless occur sometime during the next twelve months.

I hope these rather sketchy details enable you to form a reasonably clear picture of our geological activities in British museums, and that you may, through the publication of such information, be instrumental in stimulating more northerly placed workers to complete similar catalogues for museums in their areas. At present it is difficult for us to reach the more northerly collections if we have not other commitments (surveying) in those areas, and the chances of us regularly visiting those areas is, in the foreseeable future, somewhat unlikely. We believe we have data on a fair cross-section of the British fossil vertebrate record, and, this is being committed (albeit extremely slowly)at present) to county maps and stratigraphical graphs, all preparatory to eventual publication in a three volume (Cainozoic, Mesozoic, and Palaeozoic) atlas.

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TECHNICAL

THE ROUTINE PREPARATION OF POLISHED MINERAL SPECIMENS

Polished mineral specimens are required in forms suitable for: 1) identification and examination by (a) reflected light polarising microscope, (b) transmitted light polarising microscope, and (c) electron microprobe; 2) measurement of transmitted light values by microscope photometer; 3) examination for fluid inclusions.

For these purposes polished mineral specimens in four forms are commonly required. These are:

1. Polished specimens. Sections embedded in synthetic resin discs 37 mm in diameter, 8 mm thick; suitable for specimen examination by reflected light, and mounting in the electron microprobe for X-ray analysis. Specimens are usually robust and suitable for repolishing indefinitely.

2. 'Standards'. Small size specimens (often similar in size to sand grains) embedded in synthetic resin mounts 4.8 mm diameter x 4 mm length. Suitable for mounting in groups in the electron microprobe for X-ray analysis. Specimens may be robust and suitable for repolishing indefinitely.

3. Polished thins. Polished sections mounted on 48 mm long glass slides, suitable for specimen examination by transmitted and reflected light, and mounting in the electron microprobe for X-ray analysis. Specimens are fragile, and repolishing very restricted.

4. Polished wafers. Sections polished both sides, of various thicknesses and up to 37 mm in length or diameter, suitable for transmitted light measurement, and examination for fluid inclusions. Specimens are fragile.

IDENTICAL FIRST STEPS IN THE PRODUCTION OF POLISHED SPECIMENS, 'STANDARDS', POLISHED THINS, AND POLISHED WAFERS

1. Specimen rock sliced.
2. Specimen rock cut and ground to fit in resin block.
3. Where required, rock is impregnated with embedding resin, using a desiccator and vacuum pump.
4. Impregnated specimen is placed on numbered card until required, if not proceeding immediately with step 5.
5. Specimen is embedded in resin with a paper strip carrying the specimen number. A PTFE (polytetrafluoroethylene) thick walled moulding ring is used on a base of polythene sheet or glass plate, a seal between moulding ring and base is achieved with à film of grease.

6. If required, specimen mount face and back are ground roughly parallel using a diamond wheel grinding machine.
7. Specimen is ground with medium grade silicon carbide on first lap.
8. Specimen washed.
9. Specimen ground with fine silicon carbide on second lap.
10. Specimen washed.
11. If required, waste face of the resin block may be made accurately parallel to specimen face, using a lathe.
12. Specimen lapped with fast cutting alumina.
13. Specimen cleaned.
14. Specimen lapped with 6 micron diamond paste for up to about 24 hours.
15. Specimen cleaned.
16. Specimen lapped with ½ micron diamond paste for up to about 24 hours.
17. Specimen cleaned.
18. If required, specimen is lapped with 1/10 micron diamond paste and cleaned.
19. Specimen lapped with 'finish polishing' alumina.
20. Specimen cleaned in an ultrasonic cleaning bath.
21. Examine with microscope for finish and cleanliness.

For polished specimens only the next step is to turn the resin block down to 8 mm thickness.

For 'standard' mounts only the specimen may be cut out using a 4.8 mm internal diameter tube drill, and saw, and ground to 4 mm long, to fit the microprobe adaptor. For these small resin mounts, the reference number is written on a white paint background on the mount base, then varnished.

For polished wafers only the top approximately 4 mm is sliced off the resin block and mounted polished side down with Lakeside cement on a brass blank - of similar dimensions to a resin block - to fit the polishing machine. The wafer is ground to almost the required thickness, then polishing is proceeded with, as before. When polishing is completed, the block is heated, the wafer slid off the block and cleaning accomplished in methylated spirit followed by water - alternatively, with very delicate wafers, the wafers may be detached from the mounting blocks by dissolution of the Lakeside cement in methylated spirit, followed by washing in alcohol and blotting dry. Very fine wafers may be handled using a sable brush.

CLEANING OF FINISHED POLISHED SPECIMENS

Polished specimens are cleaned with ultrasonic equipment used in conjunction with a cleaning fluid specially formulated with suitable vapour pressure for cleaning ultrasonically, cleaning is followed by washing in demineralised water, and drying.

FURTHER STAGES FOR THE PRODUCTION OF POLISHED THINS

22. Polished specimen is cut out of the resin block and placed in numbered envelope.
23. Excess resin removed with diamond grinding wheel.
24. Specimen mounted with Lakeside cement polished side down on a 76 mm long glass slide numbered on the back with a diamond pen.
25. Specimen ground thin in slide holder on diamond grinding wheel.
26. Specimen rubbed to finished thickness using medium and fine grades of silicon carbide. Feldspars are seen white to grey at the correct thickness.
27. Slide washed.
28. Numbered 48 mm long glass slide fixed to ground surface of specimen with cold setting epoxy resin and set aside for resin to harden.
29. Both slides are heated on hotplate and the larger slide removed.
30. 45 deg. bevel ground on back of slide at end opposite numbered end.
31. Excess resin removed from slide with razor blade.
32. Specimen washed in methylated spirit using light friction of thumb to remove Lakeside cement from specimen surface.
33. Specimen rinsed in tap water and dried in air jet.

At this stage the slide is submitted for examination, analysis, and marking, prior to carbon coating - required for specimens in the electron microprobe.

BRIEF DESCRIPTION OF EQUIPMENT AND MATERIALS REQUIRED

Diamond saws of various sizes and diamond grinding wheels.
Cast iron lap, 400 mm diameter, speed 45 r.p.m., with water.
Bronze lap, 400 mm diameter, speed 45 r.p.m., with water.
Fast cutting alumina on self adhesive lap material, 150 mm diameter lap at 500 r.p.m., with demineralised water.
6 micron diamond lap of self adhesive material, 380 mm diameter, 40 r.p.m., with lubricant.
1/4 micron diamond lap of self adhesive material, 380 mm diameter, 45 r.p.m., with lubricant.
1/10 micron diamond lap, Microcloth, 50 r.p.m., with lubricant.
Finish polishing lap, gamma alumina on Microcloth self adhesive material, 150 mm diameter, lap at 500 r.p.m., with demineralised water.

Materials and Suppliers:

Polishing aluminas and self adhesive lap material:
Banner Scientific Ltd., 3 Three Spires Avenue, Coundon, Coventry CV6 1LE.
Embedding resin with accelerator and catalyst: Trylon Ltd., Thrift Street, Wollaston, Northants NN9 7QJ. Epoxy resin Araldite HZ 107+AZ 107 50:50: Ciba-Geigy Ltd.
Lakeside Cement: Vickers Instruments.

Diamond pastes and self adhesive lap material: Engis Ltd.
Silicon carbide C6 3F and C6 1000: Carborundum Co. Ltd.

G. O. Randall,
Durham University Science Laboratories,
Department of Geological Sciences.

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WARNING ON SOLVENTS

I'd like to inject a note of caution into an otherwise useful idea, concerning the use of Benzene solutions of Polystyrene for conservation as reviewed on p. 77 of GCG Newsletter No. 2.

The organic solvent benzene is extremely toxic (max. permitted level 35 ppm) and can be carcinogenic over long periods of exposure. Might I therefore suggest that Toluene (max. permitted level 200 ppm) be used instead and that all solvent/resin manipulations be carried out in a fume-cupboard or with adequate ventilation.

Finally, although I have no experience of the suggested solution as compared to "standard" resin solutions for conservation, I would suggest that a resin used to make light rigid foam might not be suitable for conserving geological material.

The entire field of resins, solvents and plastics in conservation is one that the G.C.G. might profitably explore.

Peder Aspen,
Curator of Museum,
Grant Institute of Geology,
University of Edinburgh.

ALGINATE DENTAL IMPRESSION COMPOUND - A COMPARATIVE ASSESSMENT OF A CHEAP MOULDING MATERIAL WITH POTENTIAL APPLICATIONS IN PALAEONTOLOGY

Replicas of fossils are commonly prepared for teaching, research, museum display and communication purposes. As various materials have been developed, techniques have been improved but principles have remained the same. Almost invariably, a flexible, elastic mould is prepared by pouring or brushing a liquid moulding compound over an original specimen. On setting, the mould is peeled off the original which is found to have imparted a 'negative' of its form to the moulding. A casting material is then introduced into the mould and allowed to set. The mould in turn imparts a 'reversal' of its form to the casting material which is removed as a replica of the original specimen.

The quality of a replica depends primarily on the condition of the original specimen, secondarily, on the qualities and compatibilities of the moulding and casting materials, and lastly, on the skill and ingenuity of the technician.

There are several well known materials available for moulding and casting, All have advantages and disadvantages and are differently favoured for particular applications. The purpose of this brief note is to draw attention to a moulding material which seems to be little known in the palaeontological world but which may well deserve a place in our laboratories. Alginate dental impression compound is here compared and contrasted with other moulding materials. The most well known of these are synthetic silicone 'rubbers', natural latex and thermo-setting materials, such as "Vinamold".

Silicone 'rubbers'

Probably the best moulding material is silicone 'rubber'. This material is available in different grades for pouring or spreading and has a curing time which can be controlled by temperature and catalyst. Very fine detail is reproduced very well although careful use of a release agent may be required to avoid adhesion to delicate specimens. It is rigid enough to maintain the mould shape yet is flexible, elastic and strong enough to survive pulling from deep cavities or undercuts provided access is not limited.

Successive applications of silicone rubbers adhere to each other so that a mould can be built up (or even repaired). Moulds will withstand a certain amount of heat such as may be generated by the curing of polyester resins in them. They are capable of surviving the casting of many replicas if used carefully.

The greatest disadvantage of silicone 'rubber' is expense. This is particularly significant if small amounts are used infrequently since part used quantities do not store well. Silicone 'rubber' cannot be reused once cured although scrap moulds can be minced and mixed with fresh material for the second application to a large mould.

Natural latex

Prior to the development of silicones in the early 1960's, latex was the most well known moulding material. Although not cheap, it is cheaper to use than silicone 'rubber' and, once opened, can be stored satisfactorily in airtight containers. Latex will reproduce detail well, perhaps as well as silicone rubber, but moulds are not so durable. Probably the greatest advantage of latex is its remarkable tensile strength and elasticity. This makes possible the moulding of objects with very intricate deep under cuts which may have restricted access holes. In fact, latex can be used to explore the form of cavities in decalcified fossiliferous rocks provided they are strong enough to withstand the breaking of adhesion.

Care must be taken to avoid latex to latex contact of freshly cured rubber since the material will immediately adhere to itself unless previously wetted or dusted with talc.

Cured moulds will eventually perish in store and will not produce large numbers of replicas without deterioration. It is not really suitable for moulding polyester resin replicas but is very good with fine plasters. For bulky moulds latex can be applied in successive coats, finishing with a bulking coat or layer of sawdust/latex mixture. If desired, latex can be rendered opaque black by including sufficient indian ink to make the uncured latex a pale grey. Once cured, latex cannot be reused.

Thermo-setting materials

Probably the best known of these is 'Vinamold' , a stiff gelatinous material available in various grades. It is melted in a water-jacketed vessel and poured over the object to be moulded. Clearly, the original must be able to withstand the temperature of the molten 'Vinamold' and, for preference, should be preheated to expand any contained air so as to avoid bubbles forming at the mould specimen interface. Set moulds are reasonably elastic and quite strong. The material is too dense to support itself if moulds need to be large.

Replicas can be made from either water-based plasters or, with careful successive applications, from polyester resins. The quality of detail is very much dependent on the avoidance of bubbles when the mould is originally applied to the original. A problem, which may occur with porous specimens, is that of stains coloration by oil from the 'Vinamold'. This is particularly noticeable on pale specimens (eg. a Chalk echinoid).

Alginate impression compound

This material is available with slight variations from dental suppliers. It is designed for the taking of oral impressions as a preliminary in the making of dentures. It consists of a fine powder to which water is added. At body temperature setting is very quick (between about thirty seconds and two minutes according to brand). Setting can be delayed by the use of iced water. When set, alginate has the consistency of a stiff blancmange. It is weakly elastic and of low tensile strength but is exceptional non-adhesive. This property renders it particulary valuable in cases where an original specimen might be damaged by adhesion of most other moulding materials. In contrast to silicones and 'Vinamold', alginate is best applied to a wet surface. This can be an advantage if the need for outdoor work arises.

Because of the rapid setting time, simple paper dams are sufficient to retain the mould around the original specimen.

A property of alginate compounds which may render them unique, is that of non-adhesion between successive applications. This enables novel reversals of morphology in cases where natural moulds of fossils are available without counterparts or perhaps where a rigid 'positive' from a 'negative' footprint is required. A replica of a missing counterpart can be made as follows:

Starting with a natural mould or 'negative' fossil form, alginate compound is applied to form a 'positive' mould. This mould is removed and a second application of alginate is applied to it to form a 'negative' mould. Casting material, water based plaster,is applied to this 'negative' mould and a 'positive' replica is produced. Alginate compound can be used to make moulds from latex, silicone or plasticine replicas.

The main disadvantages of alginate compounds are that, since they are organic, prepared moulds are subject to fungal attack if stored too long (a week is tolerable), moulds are good for small numbers of replicas only (say four or five); moulds must be kept moist and can be used only with water-based casting materials (plaster of Paris). The rapid setting may be regarded as an advantage or a disadvantage.

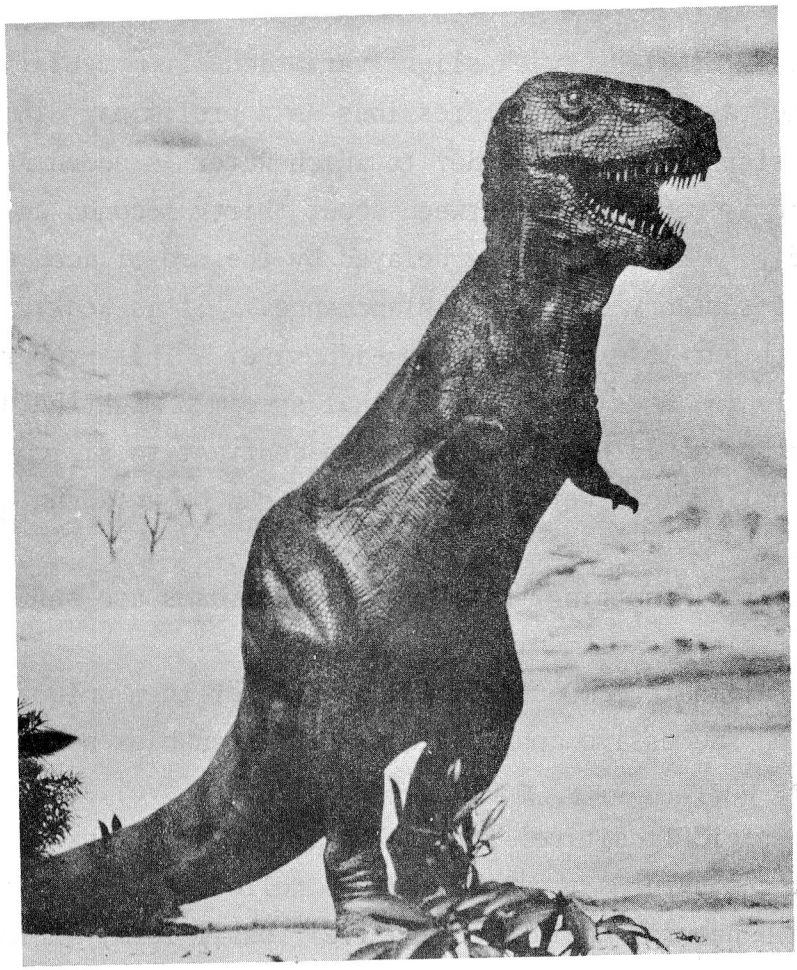
It is suggested that alginate would be appropriate (a) where a quick 'one-off' replica is needed, (b) in situations where adhesion of silicone or latex might damage an original, or (c) outdoors where a replica of a non-collectable specimen is required or (d) where moulds or trace fossils might be taken off wet rock.

For the unimpressed, it might be added that alginates smell good!

Standard moulding and casting techniques, other than those using alginates, are more fully described in Geological Laboratory Techniques - Allman and Lawrence 1972 (See Book Review G.C.G. 1 P.22)

John W. Stanley, Adult Education Department, University of Keele.

Dinosaurs by Saftvale



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