# Richard Owen Commemoration

Three studies
by
Jacob W. Gruber and John C. Thackray

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Richard Owen. Portrait by W.H. Pickersgill (1844) in the Rare Books Room of The Natural History Museum.

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John C. Thackray. I acknowledge with grateful thanks the assistance received from my colleagues in the Department of Library Services at The Natural History Museum, in particular Ann Datta of the General and Zoology libraries and Ann Lum of the Palaeontology/Mineralogy Library. Sue Goodman, formerly of the General Library, handed over her preliminary listing of the Owen Collection, and I was able to make use of existing lists of both the diplomas and the orders and medals as a basis for those published here. My listing of the correspondence was made immeasurably easier by my use of Professor J. Gruber's unpublished 'Calendar' of the Owen correspondence, which is lodged in the Library of The Natural History Museum. I hope that the few additions and corrections I have been able to provide will go some way to repay my debt to his work. I must finally express my gratitude to the late C. Davies Sherborn, not only for saving and arranging the collection in the first place, but also for providing a wealth of useful and often erudite annotation.

### **Preface**

It is appropriate, in this centenary year of his death, that the Museum should publish a work devoted to Sir Richard Owen and, in particular, the collection of his correspondence and papers held in the Museum's Department of Library Services. Owen died in 1892, and perhaps there is some symbolism in the fact that one hundred years have passed before a catalogue of the papers is published. Of more significance is the key role Owen played in separating science from the humanities at the British Museum, Bloomsbury, and causing to be created Alfred Waterhouse's imposing building for The Natural History Museum at South Kensington, opened in 1881. Notwithstanding the shade which falls on Owen's scientific reputation on account of his anti-Darwinian position, his imposing statue by Brock justifiably presides over the staircase in the Central Hall as the Museum's founding father.

To set this *Owen Centenary Issue* in context, a chronology of the key dates in the life of Sir Richard Owen follows.

#### Chronology of the life of Sir Richard Owen

1840-1845 Odontography.

1804	Born in Lancaster, 20 July.
1810-1820	Educated at Lancaster Grammar School.
1820-1824	Apprenticed, first to Leonard Dickson, surgeon and apothecary,
	second to Joseph Seed, third to James Stockdale Harrison.
1824	Matriculated at Edinburgh University.
1825	Moved to St Bartholomew's Hospital, London.
1826	Member of the Royal College of Surgeons.
1827	Assistant Conservator to the Hunterian Museum of the Royal
	College of Surgeons.
1829	Lecturer on comparative anatomy, St Bartholomew's Hospital.
1832	Memoir on the Pearly Nautilus (Nautilus pompilius, Linn.).
1834	Elected a Fellow of the Royal Society.
1835	Married Caroline Clift.
1836	First Hunterian Professor of Comparative Anatomy and Physi-
	ology, Royal College of Surgeons.
1837	Birth of son, William, 6 October.
1838	Awarded the Wollaston gold medal by the Geological Society of
	London.
1840	The zoology of HMS Beagle 1832–1836: Fossil Mammalia.
1840-1841	First President, Royal Microscopical Society.

1842

1843

Lectures on the comparative anatomy and physiology of the inverte-

Joint Conservator to the Hunterian Museum.

	brate animals.
1844-1846	A history of British fossil mammals and birds.
1846	Lectures on the comparative anatomy and physiology of the verte-
	brate animals Part 1 Fishes.
1849	On parthenogenesis.
1849-1884	A history of British fossil reptiles.
1851	Organising Committee, Great Exhibition. Awarded the Copley
1050	gold medal by the Royal Society.
1852	Granted use of Sheen Lodge by Queen Victoria. Senior Conservator to the Hunterian Museum.
1855	Instances of the power of God as manifested in his animal creation.
	Awarded the Cross of the French Legion of Honour.
1856	Superintendent of the Natural History Departments of the British
	Museum.
1859	On the classification and geographical distribution of the Mammalia.
1860	The principal forms of the skeleton and the teeth, as the basis for a
	system of natural history and comparative anatomy.
1862	On the extent and aims of a national museum of natural history.
1866	Memoir on the Dodo.
1866-1868	On the anatomy of vertebrates.
1869	Awarded the Baly gold medal by the Royal College of Physicians.
1873	Created C.B.; death of his wife.
1877–1878	Researches on the fossil remains of extinct mammals of Australia.
1879	Memoirs on the extinct wingless birds of New Zealand.
1881	Opening of The Natural History Museum at South Kensington.
1882	Experimental physiology.
1883	Retired from The Natural History Museum. Awarded an honorary
	gold medal by the Royal College of Surgeons.
1884	Appointed K.C.B.
1886	Death of William, his son.
1888	Awarded the gold medal of the Linnean Society.
1892	Died at Sheen Lodge, 18 December.
	ргрр!
	R. E. R. Banks

R. E. R. Banks The Natural History Museum London



### The Richard Owen Correspondence: An Introductory Essay

Jacob W. Gruber

On the last day of 1883, half a year short of his eightieth birthday, Richard Owen, with a knighthood as the reward of a lifetime of service to science, retired as head of the Natural History Department of the British Museum, only recently removed to its grand neo-Gothic building in South Kensington. Fifty-seven years earlier he had begun his public service as assistant conservator of the government-owned Hunterian Collections of the Royal College of Surgeons with the primary, and probably temporary, assignment to complete the long-delayed catalogues of the collections which William Clift (1775-1849) had been unable to do. Owen lived to see a national natural history collection in its own building which owed much to his thirtyfive year campaign for its establishment (Rupke 1988; Stearn 1981). The implementation of his design, however, was so long delayed during a period of rapid development and change in the natural sciences that it was already becoming outmoded. Yet, quite justly, it is his bronze statue that looks down on the main hall from the landing of the grand stairway that leads up to the galleries above. The nineteen bound volumes of some 8000 letters from about 2000 correspondents in the General and Zoology Libraries are the informal record of his lifetime devoted to the development of British natural history and science.

The almost six decades of Owen's career paralleled the maturing of the natural sciences in England; and in that process of scientific growth, he always played a significant and sometimes a central, role. "Soon after taking leave of my office in the Br. Mus. of Natural History", he wrote from his home in 1886, "an accumulation there of MSS. Pamphlets, Vols., was sent here in two cartloads, I have been compelled to part with a Gardener and to turn his cottage into their receiving-house." This accumulation of a lifetime of correspondence, research, publication and administration, a lifetime during which it seems little had been consciously discarded, is the basis of the Owen Collection. Of this original mass, some has been lost, some destroyed, some probably pilfered and the remainder – probably the larger bulk of the original mass – distributed among various recipients. Like all such collections it is necessarily one-sided, the letters from Owen dispersed among the relics of

his correspondents. Of these there are only a small number extant. Some must still lie unrecognized in undiscovered collections in private or public hands; many others are lost forever in the house-cleaning which later generations find it a duty to perform in response to the wishes of the recipient or, more often, from a lack of interest in the rubbish of the past; still others are lost through accident. What must have been an interesting and valuable series of letters from Owen to Egerton over almost half a century were destroyed in a fire at Oulton Park in the 1920s; and an equally important series to Egerton's "twin", the Earl of Enniskillen, was apparently destroyed by his successor who had no interest at all in his father's passion for geology. As Richard Owen respectably re-enters the history of science, more of his letters will make their appearance, filling a gap here and there in the two-way communication which describes the fabric of his personal and scientific relationships.

The history of the correspondence and the description of that part which remains are of some interest in the history of science: not only because of the particular value of the materials themselves for the reconstruction of the process of scientific activity during an important period of the history of the natural sciences, but for the accidents of historical preservation which make

us the heirs of source materials of such importance.<sup>2</sup>

Although the meticulousness with which Owen preserved virtually every scrap of material relating to his life and work suggests the instincts of the pack rat, there is no doubt that Owen was conscious of his own historical importance in a discipline for whose development he could rightly claim some responsibility. The occasional comment scribbled on one or another letter as he read through them in his later years supports such a concern. Certainly his frustrating experience with the few manuscript relicts of John Hunter were sufficient to make him aware of the ease with which such records could be dispersed and lost – lost not only to the historian but also to subsequent researchers wishing precise documentation of prior work. It should also have made him wary of the misuse such materials could be put to by literary heirs and executors.

In the nineteenth century, however, perhaps with the awakening of some sense of historical reality and importance, the preservation of such collections in all of their sometimes bizarre details was not unusual, particularly among those whose professions were involved with a literate record. Nor, paradoxically, was it unusual, whatever the reasons for preservation, for subsequent executors either to destroy such carefully preserved collections or to edit them severely from some fancied notion that to do so was an act of service, protection or piety for the departed. In Owen's case, he may have thought to spend whatever time was left during his retirement, late as it was, in writing an autobiography or, at least, in so ordering his archive that someone else might be able to assume that task within an order which he would have wanted. Many of the letters and documents bear, in the shaky hand of Owen's old age, an identification of the writer, a simple lament at

his death, or some brief biographical notation. One packet of material, containing some of his own manuscripts, he directed to his grandson with the covering note that: "The time may come when these Mss will be valued". For them, that time never came. There is, too, a small volume in which Owen noted with occasional support from newspaper cuttings, a chronological record of the simplest details of his life and work. There is something sad in the recollection of this old man after a life of position, influence and importance, reviewing these fragments of a past which had already been superseded by what seemed a more glorious present in which he played no part. If, however, there had ever been an autobiographical intent, there is no fragment of manuscript or any allusion which would indicate that such an undertaking had begun.<sup>3</sup> In fact, whatever he might have thought when he relived the events of his past, Owen was incapable of any real autobiographical reflection. His own letters suggest a temper of no great insight, a mind concerned too much with products of process rather than with process itself, a life too much of the present to allow the introspection necessary for an autobiography which would be anything other than a simple record of persons, places, events and, above all, personal accomplishments.



Sheen Lodge, Richard Owen's royal grant home in Richmond Park.

Owen's life dragged on for another eight years in retirement at Sheen Lodge, his royal grant house in Richmond Park. His circle of correspondents shrank very rapidly after the first few years away from the Museum. A new

generation of natural scientists were writing a revised history in which his was a smaller and smaller role. Much of what he had done, much of what had seemed so important, so central to science, had become, as he seemed to have become, irrelevant. As he grew older, as the present moved silently away from him, the peculiar distant vision of an advancing senility brought into sharper focus the years of his early triumphs against the fuzzy irrelevance of his more recent disappointments. Although he continued to potter around in science after his retirement - he published his last article in 1889, hardly different from those he had published half a century earlier - he saw these years as a period of death's anticipation. His life, however, was emptying. His wife's death in 1873 had been the first major disruption of the structure of his life. The move, finally, into the new Natural History Museum in South Kensington was the culmination of a battle begun in 1840s, which had itself evolved into an intense political struggle within the scientific establishment. His retirement and knighthood effectively closed that part of his life, a closure symbolized by the removal of all his effects from the Museum to the stable at Sheen Lodge. And finally, there was, in 1886, the presumed suicide of his only son, whose own career frustrations must have been a disappointment to the father so lacking in self-doubts or second thoughts. This last blow, despite the presence of grandchildren, drained the pleasures of the present as well as the promises of the future.

There was, too, the estrangement from the scientific community which had rapidly grown away from him. For the young, the new biologists following the lead of Darwin and Huxley, his own work was at best irrelevant or pertinent only within a theoretical scheme already superseded; his old friends were growing old with him, but rapidly dying away from him. He had lived too long; he had outlived his own reputation. His earlier defeats, exaggerated in their retelling, clung to him as a shroud making him something of an anti-hero in the struggle for the truths of science. A young Regius Professor of Modern History at Oxford could write ten years after Owen's death in terms that must have been shared by many contemporaries of whom Huxley was the hero, that, "Owen was a [damned] liar, simply. He lied for God and for malice. A bad case." With the birds he loved in his garden at Sheen Lodge and in his library surrounded by the medals of his fame and the

remnants of his world, he passed away his life.

In those last years, his house was, as his life was, managed by his daughter-in-law whose seven children were growing up there in the shadow of the old man, someone to be feared rather than loved; for them he was little more than a legend (Ommanney 1944). None of the grandchildren followed him into science nor did any have any understanding of his accomplishments.

Even before his death, however, the project of clearing his literary remains had begun. It was the necessary and for that time the almost inevitable preparation for the loving biography of the great one to be written by whatever member of the family or close friend seemed to have sufficient

literary and devotional competence to write it. In this case the task could fall only to the Reverend Richard Starton Owen, the eldest male survivor (R.S. Owen 1894). He knew, however, little of his grandfather's work; and, in fact, he seemed convinced by the consensus of science that Owen's work was of little value and hardly worthy of recall. The result is a biography that, except for an almost complete bibliography, is hardly useful for an understanding of either the man or his work. It is an unconscious parody of the biography as an act of filial devotion. In quoting extensively, however, from what seems to have been a continuing diary or day book of Owen's wife Caroline – an important document which now seems to have been lost – the biographer did perform a valuable service to the memory of his grandfather and through that, the history of science.

Owen saved much of the record of his life in the haphazard and disorganized manner in which most such collections were preserved. And when he left the Museum, he took with him virtually all of what had accumulated over the almost thirty years of his tenure, in addition to the scattered materials which he had carried with him from the Royal College of Surgeons in 1856. In the early part of 1892, when it was already obvious that Owen was dying, C. Davies Sherborn was asked to visit Sheen Lodge to advise the family on the sale of the remaining items in Owen's library. Sherborn was a self-trained bibliographer. Born in 1861, he spent most of his eighty years in The Natural History Museum ferreting out bibliographical references which formed the substance of his *Index Animalium*. He had a passion for the preservation of manuscript materials many of which he found in the miscellaneous lots of booksellers (Norman 1944). It was probably through his association with B.B. Woodward, then librarian of The Natural History Museum, that Sherborn was introduced to the Owen family and the material which Owen still preserved. Owen, "had sold previously so that there remained only some ten year's accumulation [of books]", Sherborn noted in a letter to B.B. Woodward "I spent many hours with the old man, and heard his reminiscences of Abernethy, Christopherson, the third Monro and all the great men of his youth, a circumstance of great value to me when two years after I wrote his life in conjunction with his grandson" (Norman, 1944, 65–6). Unfortunately for both biographer and historian, Sherborn's idea of utility was restricted primarily to that which was relevant to Owen's science so that while he was certainly enchanted by the gossip of the early years, he recorded none of it. "My first duty was to clear up his MSS and papers which were in a cow-shed, exposed to rats and rain. I found there his will, an original report on the insanity of George III, and the original treaty with King Radama of Madagascar over the Slave Trade. This latter I restored to the Colonial Office . . . and the George III Report went to the College of Surgeons. Owen's own MSS were on foolscap twelve feet thick and his correspondence filled many packing-cases. At length it was all sorted out, and after the Life was published his grandson gave me the lot, and it filled a four-wheeler to take home. The MSS were distributed to those interested all over the world . . ."

(Norman 1944: 88) The last sentence accounts for many of the gaps, some of which may never be filled, in the collection.

Sherborn's knowledge of the materials, his own scientific competence and, probably, his regard for Owen's work led to a suggestion of a possible collaboration on the proposed biography. On 20 August 1892, when it seemed certain that Owen was dying, although he lingered on for another four months, Sherborn wrote to Woodward with an excitement he could not conceal: "I was summoned on Tuesday morning to East Sheen and asked to collaborate with the Rev. R.O. on the Life and Letters of Richard Owen. All is yet a secret, as by no means must it get to the Press until matters are settled; but I am proud that I should have been chosen by the family after all these years; and not only chosen, but thanked again and again for all my kindness when first I went down there. I am already at work and have nearly disentangled the letters out of the MS. Some 10,000 are looked out, and I hope next week to begin the classification and extracting . . . I must husband all my time and strength now, for it is a giant's task set before me, and this must cap, not sink below, my other works . . ." (Norman 1944, 65–6)

Richard Starton Owen had second thoughts. Two weeks later, 3 September 1892, he wrote to Sherborn to say that after consulting old friends of his grandfather and having given the matter much thought, he had decided: "That as the biography is not to be a narrative of Sir R's scientific life – except with reference to his works as they appeared, but is purposed rather to be a record of his private life, the narrative will be drawn principally from the joint diaries kept by Sir R. & his wife. I find that these are so purely a family & private nature as to compel me to do all of the extracting & compiling myself." Given the new direction which the biography was to take, the grandson felt, therefore, an actual collaboration was neither useful nor necessary. "On the other hand I feel sure that as regards sorting of correspondence & so on - no man is better fitted for it than yourself. I feel greatly obliged to you for all your kind help & suggestions - & therefore if you feel inclined to continue the sorting of the correspondence etc. with me & would undertake to revise any mention of Sir R's scientific work, so as to preclude the danger of error, I sh'd be glad to avail myself of your help & am, sure that the question of remuneration could be very easily arranged ..."5

It is tempting to speculate on the nature of the advice given Owen by his grandfather's old friends, whoever they were. Taken in conjunction with Huxley's long diplomatic essay which Sherborn surprisingly had arranged as the epilogue to the biography, – and equally surprisingly, Huxley had agreed to write – I think that even his friends had already regarded Owen's science as passé if not, indeed, in error. The notion of progress in the attainment of what then was certainly assumed to be scientific truth, the idea of absolute error in the logic of science and the stigma attached to such error had already gained such currency in the ideology of science that there could be little utility in recalling the major thrust of Owen's science or the often controversial paths on which his work had taken him. The history of science

in that view was little more than the documentation of the discovery of truth and the rejection of error. Already, even among his friends, Owen's reputation as a scientist, built upon sixty years of active and innovative research, was dissolving in the acid of progressive change. History had already defined him as a loser in the continuing battle for scientific truth; it had consigned him to a position outside the main path of scientific progress.

For the maintenance of the record, however, it was fortunate that Richard S. Owen chose to depend on the diaries, because, except for fragments. these documents seem no longer to be extant. We cannot know, however, how excluding was the sense of privacy of their editor, how much useful information is no longer available to bring the Owens out from the shadows to which, despite the best efforts of biography, the lack of information still consigns them. The diary's extracts are snippets, whose selection seems designed only to enhance a socially and scientifically acceptable image, leaving us to wonder whether so intelligent and independent a woman as Caroline Owen was not, in fact, more perceptive than the diary fragments suggest. From the standpoint of Owen's scientific reputation, the decision to treat it summarily and only as his science impinged on his private life, using the manuscripts and correspondence for documentation only, was disastrous. His grandson was himself unable to assess, nor was he competent even to describe his grandfather's role in the history of science. From his grandson's account, Owen emerges as something of a social fop, concerned primarily with his aristocratic friends and the honours which he received from the establishment. Because it is too often cited as the biographical source for a treatment of its subject – necessarily so since there is no other – it should be noted here that Owen's biography by his grandson is just barely useful as a historical document. A contemporary, who had known both Owen and his work for years, put the case forcibly but fairly:

[The book] is, without exception, the very worst account of a remarkable man that has come under our notice. What a chance have the writers thrown away! How valuable, how picturesque a narrative might have been composed if only the task had fallen into competent hands! As it is we have to content ourselves with a curious collection of odds and ends – fragments of scientific papers, snippets from Mrs. Owen's diary (edited and written up to date), extracts from newspapers and magazines, with here and there a letter, all flung together without method and without accuracy – not as part of an historic record, but apparently with the frivolous intention of enumerating the number of titled persons whom the subject of it had met and the diverse societies he was thrown into.<sup>7</sup>

Owen died on 18 December 1892; his death, however, hardly interrupted the sorting of his literary remains. Sherborn, although disappointed at not having been enrolled as collaborative author, continued to find and to order the papers, many of which, particularly Owen's own manuscripts, were lacking identification, often with the loose folios in complete disorder. Since the decision had been made virtually to disregard the scientific materials in writing the biography, Sherborn had a free hand in both their organization and their disposition. Some, for example, were sent to the Geological

Society, in whose publications Owen had first described many of his fossil specimens. In a letter dated 22 June 1893, John Marr, the Secretary of the Society thanks Sherborn, "for the interesting papers relating to the Society . . . The Librarian has made a selection of those we do not possess, & others are being returned to you in accordance with your request". About a hundred of the scientific letters were retained by R.S. Owen, some or all of which were sold by him. Sherborn wrote to Woodward on 2 December 1916, that he had seen a Maggs catalogue of autographs in which there were five letters addressed to Owen. Sherborn had no doubt that he had sold the auctioneer, "his two albums and that this portion of the Owen Correspondence is now lost to us . . . Fortunately there were not many of scientific value". 9

In the main, however, when sorted, all of the papers were divided into the purely personal papers and those which Sherborn thought had some scientific interest, either historically or for the documentation of specimens in the collections of The Natural History Museum. It was at this time that the collection was purged of its items which seemed of no value. When he presented most of the material to the Museum in 1908, Sherborn wrote to Woodward:

I have been carefully through the collection with a special knowledge of the history of science and of the collections of the British Museum (Nat. Hist.) and have destroyed several thousand letters of no value. Richard Owen kept everything and the great bulk of those destroyed were letters from tradesmen and similar unimportant persons from our point of view . . . This collection is of infinite value to the British Museum, for hundreds of them refer to specimens actually in the various departments of Geology or Zoology. They will form a fitting companion to the Owen drawings [Ingles & Sawyer 1979] and will be a mine of information on general and bibliographic questions. They have been of the greatest service to me during the years I have held them in answering queries as to the date of publications, the movements of men, and other matters in connection with my "Index Animalium." Norman 1944.

In view of the large number of letters that seem *now* to be of little importance which Sherborn preserved and the different approaches to the history of science which have risen in this century, the mind shrinks from the contemplation of what those thousands of letters he destroyed might have contained, the unimportance of which seemed so obvious almost a century ago. There are certain and unexplained gaps in the collection which are tantalizing in themselves; but it is possible that not all of these are the results of Sherborn's felt obligation to cull the collection of all that seemed valueless. Nevertheless, Sherborn deserves great credit for the preservation of this valuable archive, particularly in view of the scientific displeasure which had come to be associated with Owen's name even before his death.

Five years after he had first begun his work on the collection, Sherborn, almost incidentally, came into possession of its largest part. On 6 October 1897, Richard S. Owen wrote to Sherborn that he was leaving for New Zealand and would be gone six months. "Can you come round tomorrow morning and cart off the letters?" he asked. "I shall be at home then . . .

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Species 2. Myl. Harlant, O. (Megalonyx laqueatus, Harlan, Orycterotherium Missuuriense, Harlan.) Maxilla inferior symphyse breviore, latiore; molaris secundus subquadratus; ultimus trisulcatus, sulco inferno bi-angulari.

Species 3. Myl. goeustus, O. Maxilla inferior symphyse breviore, latiore; molaris secundus subtrigonus; ultimus trisulcatus, sulco interno rotundato.

Genus 4. Scelidotherium, Owen. (Syn. Megalonyx, Land\*.)

Dentes  $\frac{5-5}{4-4}$  aut contigui aut intervallis æqualibus discreti ; superiores trigoni ; anticus inferiorum trigonus, secundus et tertius subcompressus, paginā externā sulcatā ; ultimus maximus, bilobatus.

Caput femoris ligamento tereti impressum; tibia et fibula discretæ. Astragalus antice duabus excavationibus. Calcaneum longum, crassum. Fulcula magna, semiconica:

Species. Scel. Leptocephalum, O.

Scel. Cuvieri, O. (Syn. Meg. Cuvieri, Lund.)
Scel. Bucklandi, O. (Syn. Meg. Bucklandi, Lund.)
Scel. Minutum, O. (Syn. Meg. minutus, Lund.)

Genus 5. Cortonon, Lund.

Dentes 1-4

Genns 6. SPHENODON, Lund t.

A Both this genus, and Colodon, Lund, are indicated rather than satisfactorily established. The teeth of the Sloth are first developed in the form of hollow obtuse cones, and do not assume the cylindrical form until worn down to the part which has acquired, in the progress of growth, the normal time knews; and this is afterwards maintained, without appreciable alteration, during the subsequent uninterrupted growth of the tooth. The compressed molars of the Scelidatherium, which doubtless follow the same law of development, would present in the young animal the form of hollow wedges, and such I suspect to be the nature of those teeth, which are figured by Dr. Lund in the above-cited Danish memoir, plate xvii, figs. 5–10, and on which he has founded his genus Sphenodon. Let \( \text{I.e.m.} \) \( \text{I.e.m.} \)

successing and in whom the first of the first of the second seconds of the second sec

"Monois in Viensk. Tolak. Skr. 5 Rake, Mili- + mother Sp. XII, 3 - (1048), p. 257 -Kampedor nily 2 - Playton, (oclodor - 45. 5 Plates apparently conformatory of 4-4 + Whipe yeleck time these of Magablace - 4

Would you mind giving them houseroom while I am away, & also the prints of Hunter which I fear are being treated in rather a reckless fashion." Having taken the material, Sherborn noted its temporary disposition in his own crowded quarters in a memorandum four days later: "The cupboard full of letters & papers in my back room, the MS of Hunter in the safe, the papers in the cupboard in Smith Woodward's room at the Museum & the Diplomas of Sir R. Owen there are held in trust for the Rev. Richard Owen & are to be kept till he asks for them. The scientific letters he has promised to me & I intend them for the nation to be preserved at the Natural History Museum under B.B. Woodward's care as the Scientific Correspondence of Richard Owen." Soon after, Sherborn presented the largest portion of the material. including the scientific correspondence, to the Trustees of The Natural History Museum on condition that they remain associated with the Department of Zoology and Geology and kept in the General Library since the overall criterion which had guided his selective preservation had been the utility of the correspondence for the explication of specimens added to the Museum collections during Owen's long tenure as its first Superintendent and Director (Norman 1944).

Earlier, when Sherborn still had thoughts of actively cooperating in writing Owen's scientific biography and because he was acting as a consultant to Richard Starton Owen, he had sought other collections of Owen material. He had, for example, examined the archives in the library of the Royal College of Surgeons, but apparently without much success. A letter to him from C. Stewart indicates the lack of concern over what must have been a relatively large amount of material from Owen's early career at the Hunterian. When, with a great deal of relief, Owen left the Royal College of Surgeons in 1856 for the Superintendency at the British Museum which had been specially created for him, he left much of his earlier correspondence and manuscripts at the Hunterian. It is difficult, however, from an examination of both collections to discover what principle of selection Sherborn used. In any case, Stewart's response was not very promising. "I am sorry that you should have had so much trouble about the Owen papers", he wrote. "The case in which they were kept with many of doubtful value, has been for sometime in one of the cupboards in the Museum Hall. The cupboard was cleared during the alterations connected with building the new Museum and no one seems to know what has become of it. I have had the various storerooms searched without success. I do not fancy the papers to have been so valuable as you suppose". 10 The concern for the relicts of Owen's life and career did not change much in the ensuing seventy years. When, through the kindness of Mr LeFanu, the librarian, I was given access to the Owen materials in the Royal College of Surgeons in 1959, they were still scattered about and, for the most part, uncatalogued. 11

The neglect of both Owen and the primary collections of his correspondence and papers was shared in certain quarters of The Natural History Museum where they lay, virtually unused, since Sherborn had deposited

them after his work of editing was completed. The Librarian, Mr A.C. Townsend, recognized the value of the collection for the history of science. He told me in 1959 when I first began to work on the collection, that Sir Gavin de Beer, the Museum's director and a Darwin biographer, thought that Owen's crime in opposing Darwin was such that his correspondence and papers deserved no place in the Museum over which Darwin's statue initially commanded the view from the main staircase. Fortunately, such attitudes, born of something of a distortion of history by its victorious participants and their intellectual descendants, are changing as the distance between then and now dissolves the irrelevancies of much of the issues in conflict.

Unfortunately, Sherborn made no detailed description of the components of the Owen collection. There is a brief list, some parts of which can be correlated with extant portions. Apart from the "scientific correspondence" which constitutes the bulk of the manuscript material there are several other categories. The first of these is a mass of correspondence of the Clift family, mainly that of William Clift going back to the end of the eighteenth century. Sherborn thought most of this material "twaddly" but it provides a useful and interesting archive for social history in general and for biographical detail of William Clift in particular. Jessie Dobson (1954) used much of this material in writing her very useful biography of Clift in which she describes the fate of the Clift archive which, because of Clift's habits, was probably quite extensive. Clift died on 20 June 1849. Six weeks later, his effects were sold at a two-day auction at which four lots (241, 242, 243, 253) were described in the sale catalogue as consisting of, "all the correspondence between Mr. Clift and most distinguished people, much of it relating to the destruction of the Hunterian Manuscripts by Sir Everard Home, Bart., and also such private correspondence, love letters to and from his wife . . . "Thomas Madden Stone, who bought the lots for twenty-eight shillings offered to sell them all to Owen, but Owen thought the price too high and took only the love letters. Stone selected what he wanted and sold the rest for scrap paper. Eventually, in 1945, the Royal College of Surgeons obtained Stone's collection. Owen took many items from Clift's assemblage before the sale and it is these which form the major part of the Clift portion which was turned over to The Natural History Museum by Owen's daughter-in-law in 1908. It is bound in volume 7 and part of volume 8 with the collection (Dobson 1954: 129).

The second category consists of the personal correspondence of Owen's family; of these, Sherborn writes in a note of 29 February 1908, prefacing a series of letters and memoranda from Owen: "Richard Owen's own letters were bound up in 4to vols & kept by the family. They numbered 1100 & more & were mainly addressed to his family. These [in the bundle] are a few odd letters of interest." (OC21:19) All were originally bound up in five volumes which Richard S. Owen kept in the attic of his Ramsgate home until his death in the 1930s. <sup>12</sup> Four of those volumes are extant. The first, fourth and fifth were salvaged by R.S. Owen's sister, Mrs Frances Hirtzel, and presented by her to the Library of Temple University in 1963; the third, consisting of 212

letters, found its way to the library of the Royal College of Surgeons in 1961 through the gift of Miss Tremaine and is now numbered MS add 262. The second is probably now lost or its contents dispersed; there are thirteen loose letters which are almost certainly from the missing volume. It should also be noted that letters have been removed and are missing from all the extant volumes. Furthermore, except for the scrap noted above, there is no trace of Caroline Owen's diary nor of a putative day-book kept by Richard Owen. The family letters on which Richard Starton Owen drew heavily for his biography were primarily long, gossipy letters from Owen to his sisters back in Lancaster, and those to Caroline, or William Clift – his father-in-law – when he was away from London.

These contain a great deal of personal information which describe the life of the Owens and the development of Owen's reputation. As in the case of William Clift, many of whose personal letters to his family are preserved in the Owen collection. Richard Owen carried on an active and continuing correspondence with his sisters in Lancaster until their deaths. They are the accounts of the successes in the metropolis of an older brother to his unmarried sisters who had remained at home. Judging from the nature of the extant materials these letters to his sisters were carefully preserved during the lifetime of the recipients and returned to the writer by the last surviving sister when she came to live with Owen after his wife's death in 1873. Interestingly enough, none of the letters from the sisters seems to have survived the pruning either by Owen, by Sherborn, or by Richard Starton Owen to whom, according to Sherborn's rough classificatory list, this family correspondence along with the literary correspondence and the medals and honours were returned in 1898. When on a long trip, such as his month-long stay in Paris in 1831 or his trip to Egypt in 1873, Owen would write something of a letter-journal and these represent rare detailed autobiographical fragments which the grandson transferred almost wholly into the text of his biography.

A third category consisting, according to Sherborn's divisions, of "literary correspondence" was apparently kept by the family, and its subsequent history is obscure in part because the definition of the category itself is obscure. It is reasonable to surmise that part of it comprises the collection of 230 letters, which were presented to the Library of Cambridge University by Richard Starton Owen in 1912. These letters are in the main single letters from over 200 writers and, on the whole, deal with matters of little historical substance. They are little more than a collection of autographs. One interesting feature of this small part of the original mass is how different they are as a group from the rest of the collection. In the main they do not deal with scientific matters; and only about ten per cent of the writers are represented in the larger collection.

The "personal correspondence" and the "literary correspondence" along with a category of "private family letters to Owen" (of which there seems to be no specific record) and Owen's diplomas and "honorary papers" were

returned to Richard Starton Owen after his return from New Zealand in 1898; ten years later these last were given to The Natural History Museum by Owen's daughter-in-law. In 1921, Sherborn presented a miscellaneous collection of manuscript material to the British Museum in Bloomsbury; of these many almost certainly came from the original mass of Owen's

manuscripts.

There may well have been many other letters kept out from the original collection by Richard Starton Owen and subsequently lost, given away or sold. The last may well have been the case with letters from literary figures of some reknown. One such example is that of a group of letters from Charles Dickens. On the basis of extracts published in the biography there were at least seven letters written to the Owen family by Dickens, who was something more than an acquaintance and probably a friend, at whose request Owen wrote at least four identifiable pieces for his *Household Words* and All in the World. There is no letter extant in the main collection, however, and only one brief letter from him, apparently congratulating Owen on his controversial lecture to the YMCA (Owen 1864), in the Bloomsbury collection. Similarly, Owen had some correspondence with Macaulay and Thomas Carlyle. Letters from neither of these appear in the correspondence; nor are there any from such artists as Landseer and (except for an early note) Holman Hunt, with both of whom Owen had a social relationship strong enough to have resulted in some written correspondence. In fact, eleven letters from Owen to Holman Hunt and his wife are in the Library of the American Philosophical Society. They begin in 1881 when Hunt painted the portrait of Owen which was shown that year and now, refurbished, hangs in the Board Room of The Natural History Museum. This short series of what are essentially notes dealing with the portrait display a social intimacy which, along with the internal evidence of the letters themselves, indicate a two-way correspondence. Such letters as these would not, of course, have been included in a collection preserved and selected for its importance to a history of science or a history of the museum collections. Nevertheless, they would have been preserved some place but are, it seems, no place now.

There are, indeed, curious omissions from the scientific correspondence which cannot be explained on the ground of subject irrelevance. Sherborn himself noted in his memorandum of 1908 that, "the letters of William Buckland have mysteriously disappeared since they came into my hands". Two of these were purchased as separates by the Library of the American Philosophical Society; and fifteen remained at the Royal College of Surgeons when Owen left. The internal evidence from the much greater number of letters from Owen to Buckland, and the intimacy of the relationship between the two, suggest that there were many more. Where are the letters from William White Cooper, Owen's student, friend and physician? There are twenty-three letters from Owen to Cooper in the Library of the American Philosophical Society which attest to the intimacy between the two men and their families from 1835 until 1883; but, except for a single letter in the Royal

College of Surgeons and one in the Cambridge University Library, there are no letters from Cooper to Owen in the large collection.

Edwin Chadwick was a friend, neighbour and co-worker with Owen on parliamentary commissions in the 1840s; while there are a number of letters written by Owen to Chadwick in the Chadwick Collection at the University of London which testify to the close personal and professional relationship between the two men, Sherborn chose to exclude all of the Chadwick letters from the main collection. These, thirty-nine in all, are part of the miscellaneous correspondence which he deposited with the British Museum in Bloomsbury. Like them, there are others which, although probably part of the original collection, have found their way into the Bloomsbury collections as additional manuscripts 39954, and included in the miscellaneous additional manuscripts 42578 to 42585. The first of these consists of two volumes entitled "Non-Scientific Correspondence of Richard Owen". Despite its title, its contents are also primarily of scientific concern and seem little different as a whole from the much larger "scientific correspondence". In addition to that of Chadwick, it includes the extended series of letters from Henry Acland (57), although they seem to end quite abruptly in the early 1850s. William Thoms (1803–1885) (27), William (1798–1864) and Mary Martin (31) and James Paget (1814–1899) (21). The 372 letters in all include a number of other letters of varied subject matter. Neither the content of the letters nor the position of the correspondents provide adequate explanation for the separation of these from the main collection of which they are an organic part.

From at least 1861, there was some correspondence between Owen and W.E. Gladstone (1809-1898), for whom Owen was a kind of informal "scientific consultant", as Gladstone fought his fundamentalist battles against the evolutionists and the new biology. There are no remnants of this correspondence in any of the collections which Sherborn organized, but there are at least seventeen letters scattered through the Gladstone archive in the British Museum, 14 two of which are draft replies by Gladstone to Owen. An omission such as this suggests, as in the case of Dickens, that letters from "famous" persons were removed from the collection, probably because of the public renown of their authors, and disposed of in some still unknown fashion. Such letters as these will probably continue to turn up as parts of private collections. It is also possible that the omission reflects - as does the virtually complete absence of any correspondence dealing with the YMCA lecture or with Darwinism - an effort to sanitize, perhaps by Owen himself, his antifundamentalist but theistic position with reference to matters of science.

In Owen's own lifetime, letters were probably misplaced temporarily or lost forever. This is almost certainly true of some of the letters during the years at the Royal College of Surgeons, since the collections, still extant, attest that not all of his files followed him to the British Museum in 1856, even though it is difficult to discern what criteria, if any, Owen used in deciding what to take and what to leave. Moreover, Owen notes, for example, in a

letter to Professor J.W. Clark (1833–1910), then working on a biography of Adam Sedgwick (1785–1873), that he could find only one letter from his "old friend". Actually there are forty-one in the collection over a period of the thirty years of their friendship; but still, others got away since there are three in the Library of the American Philosophical Society and two in the British Museum. Along with the thirty from Owen in the Sedgwick Collection in the Cambridge University Library, they constitute a useful and interesting record of the relationship between the two friends and colleagues; as do the letters between William Whewell (1784–1866) and Owen, divided between the Library of Trinity College, Cambridge, and The Natural History Museum.

In many of the other longer series, there are clear evidences that some have been removed. Some certainly disappeared after Owen's death, since only some of those used in the writing of the biography are still extant. In fact, someone – perhaps either the younger Owen or Sherborn himself – may have given individual letters to collector friends. When such letters, which were obviously part of the collection, have turned up they are commonly either the first or the last of a chronological series. Some even seem to have been taken from the collection after its gift to The Natural History Museum because letters with the collection stamp have turned up in Philadelphia and Australia. And then there was the normal loss of the occasional item due to careless storage. <sup>15</sup>

In some cases, however, despite Sherborn's insistence that the collection when it came to him was "remarkably complete", other letters must have been removed prior to Owen's death. Richard Starton Owen remarked on some of these omissions: "Among Prof. Owen's correspondence there remains, unfortunately, but little record of his intimacy with Charles Kingslev (1819-1875) beyond letters from the latter asking for appointments to go round the Museum." (R.S. Owen 1894, 2:201). Kingsley's interest in natural history as well as his moderate, if not liberal, position on the question of the relationship between science and religion were such that letters of substance must have passed between the men, particularly during that period of the early 1860s when Kingsley seemed to be the link between the new biology of the Darwinian revolution and the older theologies of divine design. And again, according to the grandson, "A frequent correspondent of Owen's was G.H. Lewes (1817–1878)", the psychologist and consort of George Eliot (1819– 1880), whose novels Owen enjoyed. But of his letters, only one remains in the collection. There is no doubt that in many cases, occasional letters were returned to their senders on request or for reference; or to others for one purpose or another as was the case with the single letter sent to Clark for the Sedgwick biography. Anyone who has gone through a collection of the literary remains of a lifetime must be aware of the ways in which items can and do disappear in the disorder of accumulation.

For the earlier period, while Owen was still at the Royal College of Surgeons, there must certainly have been an attrition due to the circumstances of his move from the Hunterian to the British Museum. While

interesting items still remain there, the benign neglect to which such documents were subject insured that portions of the collection could have disappeared through the years without a trace or a care. Items in the Royal College of Surgeons series do fit into sets of correspondence in the main collection as, for example, a small series of letters from George Bennett, between 1832 and 1844, which makes more complete and more useful the long and important Bennett and Owen correspondence in which there are still some important gaps. The existence of the many items from the Hunterian period in the main collection testify that Owen took a great deal with him when he moved from Lincoln's Inn Fields to Russell Square; but there seems to be no clear pattern to the selection. In any case, that move itself probably provided the opportunity for culling the earlier material under Owen's own control.

A more serious form of editing, I think, may well have occurred later and as a partial consequence of the controversy with the Darwinists in the 1860s. For although it began as another of the several controversies which peppered Owen's career (for which it seems expected documents are lacking), it rapidly turned into a bitter and highly charged personal conflict which seriously challenged his behaviour as a scientist and his position within the scientific community. Given the flavour of the controversy in the early 1880s - and Owen's role in it – it is surprising that there are so few letters in the collection either from the period, or which refer to the debate itself. There is the occasional letter, like that of John Buller for instance, who comments approvingly on Owen's position with regard to Darwin's "monkey-theory", 16 or like that from C.W. Bingham in which the writer commented on "Darwin's unmitigated bosh". 17 But these are uncommon and do not really take the place of what it is reasonable to suppose must have been more serious discussion with colleagues and friends who were opposed, in some degree or other, to Darwinism, or to those who were actively engaged in the sometimes rancorously personal arguments. Perhaps it is only a coincidental contrast, but the lack of letters relevant to that controversy in the Owen collection differs markedly from the letters that passed among the members of the Darwin circle at the time. There are omissions where one might not expect them: J.S. Henslow (1796–1861), J.D. Hooker's father-in-law and a respected naturalist, was a friend; there are 21 letters from him to Owen during a sixteen-year period from 1843 until 1859, two years before his death. However, except for an off-hand reference to Darwin in the last of the series on 7 December, 1859, a day after he and Owen had attended the funeral of a mutual friend in Colchester, there is no letter which treats the recently published Origin, or the subsequent controversy even though Henslow was to comment soon after to Sedgwick that he thought that Owen's antagonism towards Darwinism was the result of personal pique at his not having arrived at the theory first. 18

The Duke of Argyll (1823–1900) was a zealous naturalist and prolific correspondent, one of that group of able amateurs for whom Owen was a

sometimes professional guide and reference point. Argyll was also a prolific letter-writer. There is a continuous exchange from 1854 to 1859. He ends a letter on 2 December of that year [1859], only ten days after the publication of the *Origin*, with: "I have read Darwin with great interest". 19 But although Argyll and Owen were both to oppose the theory, and although he deprecates the theory in a letter of 27 February 1863, there is no letter from Argyll in the collection during the two and a half years, which were the most serious for the controversy and during which Owen's position as the counsellor for the opposition was common knowledge and, in some quarters. a common scandal. Further, except for two early unimportant letters, there is nothing from Samuel Wilberforce, Bishop of Oxford, for whose bitter and condescending review of the Origin in the Ouarterly Review Owen was thought to have provided the scientific arguments. Nor is there any correspondence with reference to Owen's own anonymous review of the Origin in the Edinburgh Review, whose authorship was quickly recognized by the Darwinians and, presumably, by others as well. There is only a faint echo of the controversy years later in a brief exchange between John Tyndall and Owen in which, a decade after the initial blow-up between Huxley and Owen, Tyndall, in a note to the latter, attempts to effect a reconciliation between the two, but is rebuffed in a brief and cold letter from Owen.<sup>20</sup> All in all, it is a curious and intriguing gap.

While Owen's attempted distinction between primary and secondary causes, as well as more specific allusions to the relationship between organic adaptation and secular change, made it difficult to know specifically what his position was, there is evidence to suggest that he thought of himself as something of an evolutionist through natural selection, if not, in fact, the originator of that notion. Given that redefinition of his own position, it is not unreasonable to suggest that he removed the more serious evidences of immediate opposition during the heat of controversy. Certainly his biographer conspired in such an effort, since in the biography one finds barely a hint of Owen's role in the controversy over Darwinian evolution; while Darwin letters to Owen are quoted, they are used only to demonstrate the friendship between the two men and the high regard in which Owen was held by Darwin. Huxley, too, Owen's bitterest critic and opponent, in the graciousness of old age, hardly mentions the conflict in his long essay which

concludes the biography.

Then there are the occasional letters which are missing. In almost every long series of letters, there is an indication by some remark or reference that a letter has been sent which is no longer extant. In some cases, such as the small Lingarn collection of twenty letters in the British Museum, some have been preserved; in most others, however, they provide the occasional specimen in a collection of autographs. Certainly this is true of many of the letters from Owen himself. The extent of the attrition is measured not only by Sherborn's confession of his own destruction of the thousands of items he thought unimportant, but also by the expected size of an archive for such a

collection. Alfred Newton (1829-1907) the ornithologist at Cambridge, for whose candidacy for the Comparative Anatomy chair Owen successfully campaigned, is said by his biographer to have accumulated a correspondence over fifty years of some "tens of thousands of letters" (Wollaston 1921: 234). In a letter to Leonard Huxley, then compiling the biography of his father, Haeckel mentions the difficulty in locating Huxley's letters among the 30,000 he had received over a forty-year career.<sup>21</sup> And in the United States, Spencer Fullerton Baird (1823–1887), whose position at the Smithsonian was roughly analogous to that of Owen at the British Museum, accumulated a correspondence of some 50,000 items. That figure over a fifty-year period averages about three letters a day – a figure that is by no means too large for an active public figure corresponding with a relatively large body of collectors and professional colleagues during a lifetime of active correspondence without telephone and without the personal visits that a more recent technology has made possible. The 8.000 letters or so still extant in the Owen Collection and scattered elsewhere, must represent only a fraction of the original total. Possibly with the heightened interest in the history of science and the documents which record an informal aspect of it, other parts of the correspondence will come to light to make more complete the record of Owen's life.

Still, the large collection of correspondence to Owen in The Natural History Museum and the much smaller satellite collections which complement it provide some sense of his "external relations" as a practising scientist through almost the whole of the Victorian period. What is too often lacking, of course, is a matching series of his own letters. Although there are a few hundred on record, letters from Owen, however, are widely scattered and, for the most part, their locations are still unknown since their preservation was dependent upon the recipient or his or her family. The largest collection is that in the Temple University Library, most of which are personal letters to members of the family. A number of letters are part of the large collection in The Natural History Museum; and, associated with its Darwinian collection, the American Philosophical Society Library in Philadelphia has acquired a number of miscellaneous letters both from and to Owen. Where collections have been preserved in a reasonably intact state, such as that of Edwin Chadwick at University College, London; Adam Sedgwick at Cambridge; Gideon Mantell in the Alexander Turnbull Library in Wellington, New Zealand; George Grey in the Auckland Public Library; and William Whewell in Trinity College, Cambridge, fuller series exist which complement those in the larger collection. However, many have been lost entirely or dispersed: letters over a lifetime to George Bennett (fl.1804-1893) in Australia or to Enniskillen and Egerton as they passed half a century in a changing and maturing science have disappeared. The losses, though regrettable, are to be expected: unlike Darwin, for instance, who had become a heroic figure in science during his own lifetime and whose family was careful to preserve the image, Owen's reputation hardly survived his death. He was no longer a hero, there was little of an heroic image to preserve and no familial interest

in preserving what there was. Had it not been for Sherborn, it is unlikely that much of the Owen archive would still be available to the historian at all.

Whatever its gaps, however, and whatever the vicissitudes of its history. the Owen Collection does survive. It survives, moreover, as one of the larger and more representative collections of a scientific figure. Certainly it cannot equal the Darwin archive, which is a monument to the Darwin family's historical good sense and familial self-assurance, upon whose existence a whole scholarly industry has been built. But it exceeds in size the modest Huxley archive with which it presents some interesting contrasts. Its very existence raises questions as to its utility. Does the arrangement of thousands of letters, fugitive documents really and usually ephemeral in their intent. whose only uniting thread is their recipient constitute anything other than a pleasant pastime, a kind of stamp collecting with just a touch of voveuristic excitement? Many historians, with the vision before them of the grand march of ideas through an obviously progressive human history, have questioned the value of such documents for an understanding of the real stuff of history. More tolerant of the diverse ways of scholarship, the anonymous reviewer in the Times Literary Supplement of one such collection of edited correspondence - perhaps himself a member of the guild - noted that: "The editor of this kind of scholarly text, like a lexicographer, is a harmless, but necessary drudge. He modestly works a small plot of ground that will be of use to another, perhaps nobler class of artificer - the historian, the surveyor, the synthesizer, who from a more elevated vantage-point maps the terrain, calculating its measurements and attempting to explain its origins."22 Perhaps.

Nevertheless, apart from the particular aid they offer for the explication of tightly defined events or historical problems, the personal and professional letters which Owen wrote and received do have their own value as historical documents. They can both deepen our understanding of the historical process of science and the nature of those who participated in it. The location, analysis and organization of those large masses of correspondence, which so distinguish the Victorian period, make possible an understanding of the important personal dynamics of institutional history, different from any

earlier period and for the period which followed.

When Sherborn edited the collection, he was conscious of the service he was performing to the history of science through the preservation of the material and its ordering. His view of what constituted the history of science, however, was constrained not only by his own interests but by a very narrow idea of the field itself. For him, a history of science was more chronicle than history just as science for him was more knowledge than understanding. What he sought to preserve in the scientific correspondence was the particular documentation for a particular "addition to science" or its publication, whether that was a particular fossil newly discovered or an anatomical observation newly made. In the first instance, as with any zoological novelty, the discovery served as the type for its taxon – the definition for many of which Owen was responsible – and, therefore, both the

specimen, the details of its discovery and description were valuable reference points in the expanding structure of a systematic biology. Although differing slightly in the roles they played, the data relating to any biological discovery seemed necessary for the sure founding of the structure of science. Such a concept of relevance or pertinence was certainly a continuing guide to Sherborn, as he sorted through the confused mass of correspondence which filled the cupboards into which he had moved the Owen manuscripts. It explains perhaps the simple remark – so apparently damning today – on a slip following the three preserved letters from James Paget, a major contributor to nineteenth-century medical science and medical education and a life-long friend of Owen's, that "Paget's other letters are of no interest".

#### To whom? and why?

Fortunately, for an understanding of how scientists make science, the very immediacy of letters demonstrates that their authors rarely make in their own letters the clear-out distinction between this "science" of theirs and the rest of the life they led. In the absence of or easy opportunity for other kinds of extensive verbal interaction, there was, in fact, the greater temptation to use the occasion of a topical letter to go beyond the limits of the particular subject itself, and to make of the letter something other than the simple record of a depersonalized transaction. Rarely do Owen's letters contain only the record of the data he was developing or seeking. His own letters, like those written to him, are informal documents, ephemeral and fugitive in the sense that they were rarely written "for the record", to be preserved for some unknown future. They, like those he received, are often hurried, some-times studied, records of busy men whose sole link to each other was that in some degree their interests moved in the same orbit. They were not for publication even when not prefaced with the always intriguing Private and Confidential. It is their very informality, their incompleteness – in contrast to the stiffer, more highly structured text of the printed work – which provide letters with much of their importance as documents for the history of science. They occupy a level of information about the products of science as well as its process. Sometimes, far different from the printed record which is self-consciously and consciously prepared for history and posterity, the letter permits us to see the meandering way of discovery which the ordered path of publication obscures. It is not for nothing that so many correspondence collections are destroyed, not by neglect but by mandate. The letter writer communicated with his immediate contemporary, his correspondent of the instant; the printed report, article or book adds to this limited audience of one, the countless generations to come. That responsibility to the future too often proves so formidable that the product in print is deprived of its history.

The dynamics of the practice of science and scholarship display a different character, in the face of the continuing record of its pursuit. It is one that can

be discerned through the looseness, the imprecision, the suggestiveness, the half-formed and freeing structure of the informal letter whose function itself was often to expose half-formed thoughts to the initial test of friendly criticism; the early, sometimes the earliest, extrusion of the idea, of one's work, from the cell of one's thought. Letters, unlike many diaries and journals, are, of course, public documents. Since each is directed to someone, they constitute a record of a social relationship. But the nature of the public document, and of the relationship, is different from that of the published work or the formal lecture. In a correspondence one can see sometimes the revealing subtleties of the intellectual process framed within the social. In their way letters are as sure a record of the dyadic social relationship, as an encounter itself. It is the significance of such a form of the literary record for an understanding of the way in which science is pursued that invests even the least of its examples with an importance beyond time.

By defining the circle of one scientist, reading a collection of letters such as those left by Richard Owen and preserved by C. Davies Sherborn, even in brief abstracts (Gruber 1985), constructs a base line from which we can survey the variability in the social world of his contemporaries and assess the

changes in the world of their successors.

Even more, however, the activity of science itself is personalized and humanized by the individuality of the correspondents, their often mundane concerns, the rhythm of their lives, and the occasional tragedy which elicited Owen's occasional comment "Poor so-and-so!" The amateur botanist Andrew Sinclair (c.1794-1861), drowned during a collecting trip in New Zealand in 1861; Simon Pittard (1821-1861), dying suddenly in Australia at the beginning of a long-sought career and leaving his large family destitute; Robert Latham (1812–1888), the distinguished ethnologist, a senile imbecile whose wife is forced to beg for the means to support him and their daughter dying of consumption; the destitute wife of Audubon seeking to sell her husband's effects; S.W. Mitchell (1813–1859), a youngish suicide, tormented by the death of his wife; or Owen's own grief as he tries, in a letter to his royal friend and neighbour, the Duke of Teck, to comprehend his son's suicide. These are the records of conflicts and controversies, of political arrangements for position, of close friendships and their dissipation by time and events. Science is as surely made of stuff of this sort as it is of the discoveries which the journals record. For science is a human product; it is a social activity, not only the result of the social structure in which it is embedded but also of all the varied personal relationships in which it finds its reality. It is the continuing social events in which the scientist is engaged which constitute a part of the world of science. In the knowledge of the membership of that world through the small events which letters describe, we relate to them through our own comparable experience and thus take the first steps into their community.

Finally, to read such letters in the original, allows the reader to collapse time and to touch personally those who made the past. Like William

Herdman, a young lead miner, who asks for Owen's encouragement in the fulfillment of his ambition to become a professional geologist. Recounting the sacrifices he has made for the science he loves, he gave expression to the feeling that all historians, who see the historical document as a ticket of entry to the past, have. "I should like to tread on the threshold of the Royal Society where so many eminent men have walked. As the name of a scientific chieftain inspires a youthful aspirant, how much more than to traverse the same rooms where they have sat in Council."<sup>24</sup>

#### Notes

- (1) Richard Owen to John Willis Clark, 25 August 1886, Cambridge University Library add 5102 f36, in response to Clark's request for letters from Adam Sedgwick for the biography he was then writing.
- (2) The history of research in the history of science is replete with horror stories of the destruction of the records of what scientists were doing and thinking on a day-to-day basis, as well as their relationships within the community of science. As historians have become more and more interested in the social dynamics of intellectual history, such ephemera that remain have taken on an added importance and value.
- (3) It is interesting to contrast the fate of Owen's manuscripts with those of Darwin against whom he has been so often negatively compared. The Darwins kept everything; and this mass has become the basic resource of a Darwin research industry as each document, each scrap, is studied in order to provide some small clue to the nature of his creative process. Darwin, no autobiographer, left only a brief autobiographical fragment requested by family and friends fully aware of his importance. Owen's family, however, had neither an interest in science nor in the intellectual world in which he had been an active participant; his son, who had never evinced any interest in science, committed suicide in 1886, leaving seven children all of whom seem to have been too terrified of Owen to have followed in his steps. When he retired from the Museum (he had a few old cronies still) to almost the whole of the younger generation, he had already been dead for at least a decade, a loser in the race for history's laurel crown. A further contrast between Darwin and Owen lies in the careers of their heirs. Although the Darwins participated actively in the intellectual and scientific history of England, only one of Owen's grandchildren went on to University to pursue subsequently a particularly undistinguished career; and only one of his heirs, F.D. Ommanney, followed a scientific career as an oceanographer.
- (4) Frederick York Powell (1850–1904) to Edward Clodd, 25 February 1902; in comparing Owen to Gladstone, he was more understanding of the latter's fundamentalism: "He was never honest with his own mind. He meant to be honest, but . . . he was a terrific self deceiver." quoted in Clodd 1916.
- (5) Richard Starton Owen to C. Davis Sherborn, 3 September 1892, BM add mss 42581, ff247—50. R.S. Owen erred in mentioning an Owen diary in addition to that of his wife's which, if an existing fragment and the published extracts are to be trusted, was primarily a series of brief occasional notes on the day's happenings with only occasional longer entries of description or, more rarely, comment. It was, however, on the series of letters which Owen wrote to his wife, mother and sisters, that he based a good part of his narrative. Without the extensive quotations from both, the biography would have been little more than a brief and unsatisfactory essay.

- (6) In my possession, there is a small bound notebook containing diary entries for 8 June to 29 September 1846, 29 May to 19 June 1848, and 2 September to 2 October 1869.
- (7) Clark 1895; Clark reviewed both the recently published biographies of Owen and of his successor at both the Hunterian and British Museums, W. H. Flower the latter in the Dictionary of National Biography. Clark, the son of the late Professor of Comparative Anatomy at Cambridge, was the co-author/editor of the useful biography of Adam Sedgwick whose geological views and role in the development of the discipline were similar to those of Owen in natural science.
- (8) John Marr to Richard Starton Owen, 22 June 1893, BM add mss 42581, ff111/112.
- (9) C. Davies Sherborn to B.B. Woodward, 2 December 1916, Miscellaneous Collection in the General Library of The Natural History Museum.
- (10) C. Stewart to C. Davies Sherborn, BM add mss 42582 f137.
- (11) I am, however, greatly indebted to Mr. LeFanu for his interest and his help. He put the Owen material at my disposal so that I was able, though hurriedly, to photograph most of it. In general, however, as at The Natural History Museum when de Beer was Director, although for different reasons, there was little care taken in regard to these Owen relicts.
- (12) Sherborn noted that he lost track of the collection at Ramsgate in 1937, although he does note with reference to the whereabouts of the Owen archive (Sherborn 1944: 103) at that time. "His corresp. given to C.D. Sherborn and by him to the B.M.s except about 100 letters kept back by his grandson, who sold them to Maggs in 1916. His own letters to his wife and sister [sic] kept by his grandson."
- (13) It is perhaps a measure of the level of interest in Owen's life and career that after Mrs Hirtzel offered to present the volumes in her possession to Temple University in 1963, I suggested both to her and to the librarian of the Royal College of Surgeons that they might more reasonably join the fourth, only recently donated to the College. Although appreciative of the offer, the librarian did not take it up. Mrs Hirtzel, justifiably annoyed that prior to my interest no one had expressed any interest in her grandfather, preferred that it go to Temple.
- (14) BM add mss 44397.
- (15) On one of the letters in the collection of twenty from van der Hoeven, the Dutch anatomist, which has a hole in it, Sherborn scribbled across the top over his signature: "RATS! This correspondence was saved in the nick of time". Owen Collection 15:212/3.
- (16) John Buller to Richard Owen, 2 November 1860, Owen Collection 6:174/7.
- (17) C.H. Bingham to Richard Owen, 20 January 1863, Owen Collection 4:153/4.
- (18) J.S. Henslow to Adam Sedgwick, 24 April 1860, Sedgwick Collection, Cambridge University Library.
- (19) Duke of Argyll to Richard Owen 2 December 1859, Owen Collection 1:224/5.
- (20) John Tyndall to Richard Owen, 13 June 1871 Owen Collection 25:259/60; Richard Owen to John Tyndall, 14 June 1871, Owen Collection 21:28/9; John Tyndall to Richard Owen, 15 June 1871, Owen Collection 25:261. Owen's brief letter made clear what he thought of Huxley: "Prof. Huxley disgraced the discussions by which scientific difference of opinion are rectified by imputing falsehood on a matter in which he differed from me. Until he retracts this imputation as publicly as he made it I must continue to believe that, in making it, he was merely imputing [to] himself his own (base and mendacious) nature." Sherborn, uncharacteristically, notes on this letter that: "This is the only letter I remember in which Owen severely criticized an opponent".

- (21) Ernst Haeckel to Leonard Huxley, 6 June 1896, Huxley Collection, Imperial College of Science and Technology, London, 17:216.
- (22) "Diurnal Thoughts of a Poetical Parson," Times Literary Supplement, 14 April 1972, #3659, 406.
- (23) A number of other Paget letters, however, are preserved in BM add mss 39944, possibly presented by Sherborn.
- (24) William Herdman to Richard Owen, 22 February 1889, Owen Collection 15:111/112.

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Note: Unless otherwise stated 'Owen Collection' refers to the collection in The Natural History Museum, London.

# Richard Owen and his Correspondents: "My Dear Owen"

Jacob W. Gruber

By 1858 when he served as President of the British Association for the Advancement of Science - to be followed in that position by the Prince Consort - Richard Owen, Professor Owen as he was always referred to since the early 1830s, had become the best known natural scientist in Britain. His worldwide reputation had been built upon a quarter-century series of publications in zoology, comparative anatomy and palaeontology. If he had died then, still a young man, at the peak of his career as had Edward Forbes (1815–1854) four years earlier, he would certainly have been mourned by the public and his colleagues in the scientific community not only for the contributions already made but even more for the broken promise of what was to come. Instead, he lived on, to die, old and barely remembered, almost half a life-time later in 1892. The sciences which he had helped to create had moved beyond him in the rapidly changing intellectual climate of the last half of the century. The changes in his science, initiated and pursued by a younger generation, sketched a conceptual universe beyond his willingness, perhaps ability, to accept. Still active until the last several years of his life, however, he was still revered, when not ignored, for what he had accomplished in his younger years.

A material part of what he left behind when he died was a long record of correspondence, and includes letters received from hundreds of friends, associates, and admirers, which, for the historian, constitute something of a personal record – often merely particular and episodic – of the period as it

was reflected in the life of a single individual.

The nineteenth century was a period of communication by letter. Historians who concern themselves with intellectual and social history, while recognizing the value of such correspondence, are struck by the quantities of such materials which they must examine and which, when examined, provide an often valuable body of data for the understanding of the processes which constitute the history of the person as well as the community of which he was a part. Despite the historical interest in all such collections, what remains, though apparently of great bulk, can only be a small percentage of letters written among those who were active in the various,

sometimes intersecting, circles of communication within the nineteenth century cultural world of London and its provinces. The reasons for so vast an increase in letters during the century are several. Among them were the increasing literacy and an expanding literate and professional middle class; the introduction in 1840 of the "penny post" and a postal system that made communication by letter cheap, efficient and fast; the increasing difficulty of personal meetings in a rapidly expanding metropolis in which, well into the second half of the century, it was difficult and time-consuming to move from one section to another; and the formalities of social relationships which impeded informal meetings without adequate cause or prior arrangement.

Meetings, of course, did take place. At the weekly meetings of the Royal Society, the bi-weekly meetings of the more specialized societies, and the more exclusive clubs, such as the small informal x-Club, which grew up in association with them. Membership in these various organizations were overlapping and, while it was a justified cause of complaint that attendance was sporadic, still within the city and its near suburbs at least, unless one chose to be isolated, meetings among one's professional colleagues could take place with relative ease. Nevertheless, there were always matters which required communication at a sometimes more critical and intense level than that which could take place in group meetings. And always there were the more formal affairs which require a more formal means of communication than the often casual and ephemeral face-to-face conversation. Lacking the telephone which, of course, revolutionized the process of interpersonal communication, and the institution of the business lunch, the letter, more like the fax in its efficiency, was the easy means of transmitting information. Within London, there were several deliveries a day: a letter posted in the morning could be read by its recipient and answered on the same day. Beyond London, where delivery was promised within 24 hours, the letter was a much more important means of communication for, despite the increase in mobility which the railroad introduced, transport to London from the outlying provinces, especially from the small towns and villages, was expensive and time-consuming.

As informal and ephemeral documents, letters from an individual provide an image which is different from that which emerges from his formal writings; one is written to a particular person for a particular moment; the other to an audience and for posterity. The letter is, in fact, a product of the dyadic relationship; it belongs to, as it reflects, something of both writer and recipient. In a sense the reader is a participant in the writing and, thus, in a

real sense the letter sheds light on both author and recipient.

The letter was informative as well as inquisitive. Read, for example, the long letter from James Ebeneezer Bicheno (1785–1851). Bicheno was a gentleman. Trained as a barrister, he finished his career as Colonial Secretary in Van Dieman's Land but had had a continuing interest in the effect of new lands upon the colonials who settled them. When he wrote to Owen of America, however, that former colony had itself been making its cultural



Richard Owen, wearing the robes of Hunterian Professor of Comparative Anatomy. Issued by Maull and Polybank for the Literary and Scientific Portrait Club, ca. 1855.

way, consciously independent of its European dependency, a bastardized mixture of peoples and cultures with little apparent social order, signs of the degeneration which two centuries in a wild land had produced. Bicheno's attitude towards Americans was a reflection of a more general European feeling that physically the New World had a debilitating and degrading effect upon its inhabitants. It was a view which Buffon had expressed a century earlier with respect to all its organic populations; and it was this view that Thomas Jefferson sought to refute in his *Notes on Virginia*. Although America, politically, socially and environmentally, had its advocates in England, distinguished visitors brought to the new nation as well-paid lecturers returned home often to derogate the manners and life of their hosts.

Probably Bicheno was only a chance acquaintance whom Owen met in the lounge of the Athenaeum which, from its establishment a few years before, came rapidly to serve as the centre of London's intellectual life. Although a generation younger than Bicheno, Owen at the time of this letter in 1841, was already recognized as a major figure among the natural scientists in England. Their conversation turned on various speculations of a folk anthropological sort which Bicheno had been entertaining about the effects of colonial emigration in changing the character of the superior Anglo-Saxon stock as he was about to take up his position in Australia. Encouraged by, what seemed, Owen's interest as well as the prospect of Owen's imminent trip to America, Bicheno put in writing something of his observations and his speculations for whatever use Owen might wish to make of them on his projected trip.

Before a few observations on the Anglo Americans have escaped me & are dissipated, I will venture them to you more completely than I could do a short time since when I had a brief conversation with you at the Athenaeum. Do not imagine I presume to be a physiologist. I only attempt to connect the study of men & manners with some very general remarks of a physiological nature, & I am sure we shall all be gainers if I can draw your attention to my subject.

Whatever has been the cause, I think you cannot have failed to observe, on looking around among your American acquaintances, that they vary in several particulars from their English ancestors. Their complexions are bad (according to our estimate.) The countenance is visibly altered in its expressions about the eyes & cheek bones. The hair is weaker, & the beard, which is fully developed in the Saxon race, & some other races not Saxon, is very much diminished in quantity & quality. It is therefore not the fashion in America to wear whiskers, although they are great imitators of the English, & their answer will probably be, it is an inconvenient & uncleanly habit. In former days when we were not so much the imitators of others in our fashions & retained all our nationality, Englishmen gloried in a beard, which went out in the 17th century, & there was brought in as its expression a great volume of artificial hair in the form of wigs . . . This fashion had its day & remains among us even now in the costume of Judges, & other members of the law, but as the tendencies, among the masses, are always towards the extremes, from a superfluity of hair the fashion passed over to greater paucity, & during the French Revolution people deprived themselves of this manly ornament altogether, shaving close, and cropping the beard. To my great satisfaction we are getting again more national and hirsute, & are displaying our well cultivated whiskers and moustaches, & are not thought disfigured by a decent display of beard. I believe it has always been the fashion in the Church, both Roman & English, not to wear whiskers.

Among the orthodox a whiskered clergyman is an irregularity as great as his wearing a coloured waistcoat or a black crayat. Whewell, & most of our clerical friends, are exceptions, & wear this sexual characteristic, because they set the smaller conventional laws of their class at defiance & rest their claims on the esteem of mankind on something they deem more solid, but if you will cast your eyes about among the true friends & patterns of the clergy you will find them remarkable for being clean shaven, not a superfluous hair left growing & all the sexual vigour kept out of sight. The Roman Church, which enforced the celibacy of the clergy as a means of obtaining a religious ascendancy, did not overlook the importance of suppressing the indication & expression so likely to lead to irregularity of life, & the Church of England only imitates the mother Church in adopting the fashion. I mention these particulars to remind you how much trifles illustrate the great laws of our nature, or in a familiar phrase, show which way the wind blows. But there are some straws & feathers afloat in America to which I would call your attention when you visit it, indicative of a very singular state of feeling, & influencing the manners & habits of the people. The loss of the beard is probably connected to a diminution of sexual powers, & it cannot have escaped you that we frequently hear the remark that the Anglo Americans are deficient in gallantry, & are not so attentive to the ladies as in the old country. Whether this remark applies to the New Englanders particularly, who are the descendants of the puritans & affect an ascetic religion, or to the whole... should be ascertained. A Virginian is manifestly a very different person than a Bostonian, I have known in more than one case that Anglo American ladies, past the heyday of youth, who have visited this country, have expressed their astonishment at the attentions they have received from the gentlemen. while the young ladies, on the other hand, wonder that they should be so neglected, & even remark how different it is at Boston. I think it could hardly enter into an English gentleman's mind in a mixed company to pay attention to a lady merely because she was young. His civilities would certainly be equally distributed, & he would rather select for his neighbour at dinner one who was the ornament & pattern of her sex in feminine excellencies, be she "sweet 18" or reaching the grand climacteric. It is pretty clear I believe that American parties are much more divided into Males on one side & females on the other than amongst us, an arrangement that oddly enough indicates the want of strong sympathy in the ordinary intercourse of life. I have observed this same treatment of women in Lancashire, where, I fear, among the common people, the union of man & wife points to a very sensual kind of compact. Now with us in Wales the women are treated with more sentiment. They are well shod, well hosed which follows, well dressed & well attended on Sundays, which is the great day for trying the gallantry of the men. No decent woman passes a gentleman without dropping a curtsy, showing thereby her confidence & the treatment she receives.

When you get among the Anglo Americans you will fail to notice the colour of their hair & their eyes & the quantity, strength & character of the former. My observations are too confined to be much worth, but I have noticed their hair to be much fairer and their eyes lighter coloured than ours. The female sex in all countries almost universally indulge in flowing dresses & ornamental head gear, & among the Egyptians, Greeks, & Romans we know that curling hair, not like our curls which are overdone & an abomination, was considered ornamental. The apostle Paul, whose temperament is the guarantor for his being an admirer of the sex, is a great authority for the hair being considered an indication of the female perfection & I shall like to learn from you what is, & what has been, the prevailing fashions of our transatlantic sisters as regards the wearing of the hair. They are said to be precocious in their powers, & to lose their charms very early; & I have heard that they soon make approaches towards the characters of the male by having beards. I wonder what proportion of their men sing bass as compared to us!

The influence of the American climate will doubtless furnish a sufficient cause for this characterization of the Anglo Saxon, which, it is not unbecoming in us to assert, when

crossed by a little Norman blood, produces the finest colonizing stock of any in the world. It would be curious to know how the French & the Spaniard have been affected. But besides climate there is another source which should be examined, of a religious kind, that is the peculiar tenets of the puritans respecting the sex, marriage & its rites, which may have had their influence under circumstances not favourable to the physical development of the species. Indeed the state of society at Lowell, their largest manufacturing city, is quite unintelligible to us who never separate manufactures from immorality. But here is an assemblage of thousands of young women from 15 to 25, who have left their parents without protection, & are assembled together in a city, & yet present. I am informed, patterns of good order, virtue & religious above the rest of the world. I have a nephew settled there who vouches for the fact.

There can be little doubt that there are some conditions present more powerful than moral principle. & one of those conditions is undoubtedly to be found in the climate. though I cannot overlook the religious sentiment. I am very much struck with what climate does in Australia. We find the whole vegetation accommodated in its structure to the peculiarities of the country, the leaves inverted, or presenting two absorbing surfaces, or the peteoles performing the function of leaves, always persistent, & other strange anomalies unlike anything we find in the old world, & all this extraordinary organisation, admirably suited to a climate subject to long droughts, pretty uniform of temperature, wind, & sunshine & remarkably healthy to man & the tendencies of his domestic animals the sheep. It might have been safely predicated of a country so peculiar in its vegetations, with the presence of marsupial animals & the absence of ruminants & gallinaceous birds, that we should find it unlike in its other characteristics to anything we had known before, & I am not surprized at its contradictions to geography or any thing else, or that its rivers sh'd flow from the sea or that its swans should be black. I look forward with great interest to learning how the Anglo Saxon race will get modified under these novel conditions, & at present have great hopes he will be found to flourish both physically & morally in an extraordinary degree. The best security for his moral qualities is the perfect physical development.

I am afraid I have wearied you with speculations, but as you seemed to feel some

interest in them I have ventured on trying your patience.<sup>2</sup>

The feelings of a socio-physical distinction between those in the far-off lands by the English at home were felt and sometimes shared by those in the colonies themselves. Well into the nineteenth century, the thesis was argued that both settlers and their colony-born offspring were physically and perhaps intellectually inferior to those back home in England. Colonials like the ornithologist Walter Buller (1838-1906), a native-born New Zealander whose political skills were more important in advancing his career than his science (Galbreath 1989), and Julius Haast (1824–1887), whom we will meet later, a New Zealander by adoption, sought to compensate for the perceived and not infrequently experienced inferiority by seeking honours in the homeland (Haast 1948). The honours so received were, in part, acts of condescension and, in part, the result of active politicking by their friends. Nevertheless, viewed from the few very active centres of research in Britain and the Continent, the landscape in the world beyond seemed bleak indeed.

Owen himself never made the trip to America, nor, in fact, to any of the colonies although, in the scattered science of the latter, he became something of a cult figure. However, he received news and requests from both.

One such occasional correspondent was Louis Agassiz (1807–1873), whom he

had met in England, before his emigration to the United States. Agassiz, a well-regarded naturalist and the enunciator of a theory of continental glacial action which challenged the biblically inspired and strongly held theory of a universal flood, arrived to take up a position at Harvard University in the early 1840s. Highly respected in Europe, he was expected to renovate a national scientific establishment whose development lagged far behind that of the economic progress in the still-new nation. Since assuming his professorial position at Harvard, Agassiz had quickly become a major scientific figure, if not a national hero, through his writing and lecturing. Having himself only recently completed a successful tour in the United States, Charles Lyell (1795– 1875), a friend of Agassiz and Owen, was, however, impressed with the energy of the country and tried to persuade Owen to visit and to taste its pleasures. As he wrote to Owen in 1849,

Have you seen a course of 12 lectures in Embryology given by Agassiz & printed from short hand reporter in a newspaper "Daily Evening Traveller" Boston, with innumerable

illustrations. I can lend you it tho' perhaps containing nothing new to you.

On ordinary days 6000 of the newspaper sells but the day of A's lecture filling a whole side 8000 copies & the newsboys cry it about with the most exciting political news!... if someday you go there you will find an enthusiasm which I fear you will meet no where else in Anglo Saxondom & it is growing at a great rate & higher rates than corresponding studies here that they too may be advancing.<sup>3</sup>

Despite his popular success, unlike Lyell but more familiar with local conditions, Agassiz was disappointed in what he saw: able scientists overwhelmed by the large number of those who, barely competent, seemed to control much of the establishment.

Prior to his departure for America, Agassiz had become professionally acquainted with Owen for whom he had a high regard as both a comparative anatomist and palaeontologist. In 1858, a decade after the establishment of the Smithsonian Institution with Joseph Henry (1797–1878) as its director, there seemed to be some hope that with a few of a younger generation and with a few proper rewards from abroad, American science could begin to make its own expected contribution.

Of one such reward, more symbolic than substantial, Agassiz wrote to Owen on 19 August 1858, just as Owen reached the climax of his own career in his election as President of the British Association for the Advancement of Science. It is an interesting letter as an example of an outsider's view of the state of American science at mid-century and his attempts to improve its standing. Apologizing for having dictated the letter to his secretary because of the weakness in his eyes caused by the glare from Florida's coral sands, he wrote:

I have a delicate matter to lay before you — one of great importance, in my estimation, and involving in a considerable measure the future progress of science in this country. I have long hesitated whether I should take the step which I now take in writing to you, but trusting in your high-minded character, and satisfied that you must know me well enough to be assured that nothing could induce me to act contrary to the best interests of science, I trust you will not consider this an intrusion.

You are, no doubt, sufficiently familiar with the state of science in America to know that there is no scientific institution of a sufficiently high order, and sufficiently free from heterogeneous elements to secure authority in matters of science to the men who truly merit it. All our academies and learned societies are made up of men of more or less ability in their several departments mixed with amateurs or pretenders. Again, the situations of trust and responsibility in scientific affairs are too frequently granted from political considerations, and the recipients of such situations assume authority in matters of science on the ground of their position, some when ill-deserved. It is on that account of paramount importance that the men who are doing honest service in the cause of science, and who, by their scientific attainments deserve to have influence in matters requiring extensive knowledge, should receive such distinctions from abroad as may call public attention to their true position among scientific men. You would be surprized to see who are the men who have the greatest influence with the American government with reference to matters of science and still more astounded and disgusted also to know how some of our second or even tenth-rate men are constantly parading in the newspapers letters which they receive from dealers in shells, or mere collectors, on forms obtained through American diplomatic agents from European governments, as evidence of their scientific abilities.

Under these circumstances and seeing lately that there are vacancies in the foreign list of the R[oyal] S[ociety], it has occurred to me that your attention in filling these vacancies might be turned to America and that it would be well for you to know something more precise respecting the scientific standing of some of our men. You could not have made a more judicious selection thus far than that of *Peirce*, the only American that appears on the list of your foreign members. He is, no doubt, the greatest mathematician America has produced, or rather the only one of superior ability now living among us. We have plenty of teachers and writers of elementary works in that dept., but no original

investigator except Peirce.

Next to him, A.D. Bache, the present superintendent of the U.S. Coast Survey, seems to me deserving of such a distinction. The manner in which he has conducted this great national enterprise shows him to be a true man of science. I do not pretend to be able to judge for myself his attainments as far as they relate to mathematics and general physics, but Peirce tells me that his measurement of a base line is a masterpiece of accuracy, and that the apparatus he devised to carry out this operation is superior to anything ever made before, and that the three volumes of magnetic observations he has published. while President of Girard College in Philadelphia, contain treasures in that line. I am better acquainted with his investigations in Physical Geography, and I venture to say that all the additional information which we possess respecting the Gulf Stream, since the days of Franklin, may be traced back to his efforts, notwithstanding certain claims to originality brought forward by Maury in his Physical Geography of the Sea - a work of which the vagaries cannot fail to disclose the shallowness of its author to any one at all conversant with the elementary principles involved in the subject. The fact is that Maury is one of those pretenders in science, whose doings, instead of raising the character of American science in Europe, are, even here, appreciated at their true level by all those who labour in the same field.

The magnetic chart of North America and other investigations upon the tides conducted by Bache, are other series of highly important researches, bearing upon the theory of tides in general for Bache has shown that along the Atlantic as well as the Pacific coasts, the tidal waves are so modified by the depth of the bottom that they no longer stand in appreciable relation to Oceanic Waves. It is not necessary for me to enumerate to you in detail all the scientific investigations which have been associated with the Coast Survey since Bache has been at its head, to satisfy you that we have not a man more deserving of high distinction. I would only add that his social position as the grandson of Franklin is as high as that of any man in the country.

Next to Bache I should mention Joseph Henry, Secretary of the Smithsonian Institution

who deserves the more that his services to science should be acknowledged, as he has been willing for a time to give up every opportunity of personal distinction in order to rescue an infant institution which is already doing good service for science from the hands of political intriguers. But for Henry the liberal gift of your own Smithson, instead of being applied to the advancement of science, would have gone to swell the shelves of the Library of Congress. I can truly say that in my estimation, nothing could contribute more to give authority to these two men in this country and to increase their power for usefulness, than an election to the Royal Society of London. Nobody is better qualified to appreciate Henry's scientific attainments than Faraday and to him I would refer you on that subject. I need not add that I write without the knowledge of any of the parties concerned and that, except my secretary, upon whose discretion I can rely as upon my better half, nobody knows that I have addressed you upon this subject – so that, whatever you do, if it ends in their election, it will have its full weight here.

Since I am speaking so freely to you, allow me to add that among the men who are labouring in fields nearer us, James D. Dana stands most prominent. His works on Crustacea and Polyps are master works – the first in particular contains discussions on the affinities & homologies of these animals worthy of our best writers. The publications of Wyman & Leidy are familiar to you – they too are working in good spirit – they too are entirely devoted to their studies. With reference to the work of many of our men, it cannot have escaped you that they are too much engrossed by the amount of new species which are pouring in upon them, and that, since Harris is dead, our entomologists, our conchologists, our ichthyologists, our herpetologists, our ornithologists, our palaeontologists, and our botanists even, are describing species instead of turning their attention

to the more general & more important questions of our science.4

Such condescending, even negative judgments, were not simply the result of a chauvinistic misimpression on the part of those at home or those recently moved to newer fields of activity. The state of science through most of the century, particularly natural science, beyond Britain, France and Germany, was low with few workers spread about and very little, if any, governmental or private support. From Buenos Aires, for instance, Carl Burmeister (1807–1892), a translated German, provided Owen with a flow of information during the 1860s and 1870s on more recently discovered fossils of the kind which when Owen had described them for Darwin had introduced him to palaeontology. But Burmeister, appreciative of Owen's satisfaction with his works, felt it necessary to apologize for their imperfection: "I know very well that they are not perfect, but regarding the difficulties to work without scientific books in this country every one must concede that I have done much. Here I must be all; workman with the hands as well as the mind, and what is not done myself is done bad or not done at all. Sometimes I am sculptor in working with broken bones, other times a painter to make drawings and at last scientific writer to make descriptions and comparisons of my own handworks before executed. And not only in fossil bones I can be occupied; also the insects and the other living animals must be objects of my interest, than I have no sure person for my assistance, and scarcely an helper who can do anything of nature."5 Burmeister's complaint was by no means unique. Throughout the correspondence, from the collectors who provided Owen with the material he processed into the reports which made his

reputation, there is the common complaint of the lack of support and the isolation experienced by the serious worker.

#### Collectors

Given Owen's zeal for assembling collections at the Hunterian Museum and the British Museum as well as the criteria which guided Sherborn in his editing of the papers entrusted to his care, it is not surprising that many of the extant letters are from collectors and amateurs informing Owen of a discovery here or there, requesting identifications for their treasurers, or offering them to Owen for inclusion in his public collections. Some of the letters have an importance, as Sherborn anticipated, in identifying undescribed and sometimes unlabelled specimens long hidden in the Museums' cabinets; others, however, provide a more personal picture of both the collector and his activity as well as his relationship with his professional guide. It was a relationship which played an important role in the accomplishments and process of the natural sciences during their earlier stages in the Victorian period.

John Cunningham, examining the quarries near Liverpool during his free time, is an example of the type. Responding to a request from Owen for specific information about the discovery of fossil raindrops twenty years

earlier, he wrote in 1858:

In the spring of 1838 I went across Storton's Quarry to select some blocks of stone I required for a building I had the superintendance of etc. I pointed out to the Foreman several beds or seams of clay between the strata. And requested when he lifted up the strata reposing on the clay beds he would examine the undersurfaces of the slabs that rested on the clay beds. And if he found any impressions of vegetables or animals he would immediately communicate to me the circumstances. In the course of 10 or 12 days after I had made that request he sent a person over to my office in hot haste with the intelligence that he found the impressions of a "man's hands and knees," I of course lost no time in getting over to the Quarry and was much gratified with the spectacle presented on the slab which I at once saw were the impressions of the animal called by

Professor Kaup the Cheirotherium similar to those found at Hilburghausen.

A considerable noise was made about the discovery in consequence. Numerous footprints of other reptiles were subsequently found on the surfaces of the slabs lying underneath the stratum on which the most perfect impressions of the Cheirotherium were found. These, however interesting, were soon superseded by the announcement I made at one of the meetings of the Natural History Society (now defunct) of having discovered on the surface of the slabs impressions of three distinct showers of rain. I was much laughed at and ridiculed for imagining such a thing could possibly exist or could take place. I however stuck to my text notwithstanding of the ridicule bestowed upon me "and my watermarks." In the month of July following or in August I forget which I had the happiness of meeting in the Quarry the late Dr. Buckland. I directed his attention to the warty appearances on the slabs, and communicated to him my notions as to the operating agents in producing those warty excrescences. He stood for several minutes looking earnestly at the impressions but said not a word. I was afraid that I had subjected myself to his ridicule also and for some two or three weeks afterwards I was very quiet on

the subject of my fossil showers. However at the meeting of the British Association held that year at Newcastle the Dr. came out with the astounding fact in the Geological Section and then and there gave me the credit of discovery [Buckland 1838]. Subsequently to that he kept up a correspondence with me on many matters relating to the Storton Quarries and elsewhere and urged me much to bring several facts (which I had collected) in papers before the Geological Society. But with exception of my paper upon the Fossil Rain drops which he read, I do not think I ever contributed to the Society anything of much importance. My paper I think was read at one of the meetings of the Geological Society in 1840 or 41.<sup>6</sup> At any rate I went up to London at the Dr.'s request to attend a meeting and dined previously with the Geological Club at I forget the Tavern, and was introduced by him to all the leading men of the Society. The following morning I had the pleasure and honour of being introduced to you at the Surgeons Hall in Lincoln Inn's Fields and that I think must have been in 1840 – and previous if I am not mistaken to the reading of my paper . . .

I may mention that my paper was by Dr. Buckland altered in several places and particularly in one point upon which we could not agree, viz. I maintained the impressions, i.e. the indentations made by the animals must have been filled up with wind-drifted sand whereas he stood out for water transport. And as he had altered my views into his, I wrote to him to the effect that he had better take the credit of the paper

entirely as it was not a matter I attached much importance to.

I have in the foregoing given you almost every circumstance connected with the discoveries in Storton Hill and if you can out of that vast amount of verbiage extract what you require in the notice you propose to honour me with in the Encyclopaedia Brittanica I shall be pleased with whatever you may think proper to say about the matter.<sup>7</sup>

While collectors of specimens in the existing world of Nature were a relatively common sight on the English landscape since at least the seventeenth century, their activities were avocational rather than vocational. If theirs was an aim more serious than that of discovering Nature and its charms as part of a Romantic reaction against reason and order, it was to fill out the divinely designed natural world with Man at its center. They were the naturalists who were passionate in their interests which ran to assembling collections for display rather than for their use for an understanding of the processes of Nature (see e.g. Allen 1976, 1986) Whether they collected plants or insects, with large collections or small, rich or poor, these men and women, these naturalists with their observations of the products of Nature, were collectors at the most essential level in a gradually expanding hierarchical structure of an emerging natural science. To use the dichotomy of amateur and professional to describe them tends to conceal the complexity of the social system of which it was the skeleton. Certainly it tends to devalue the contributions which many non-professionals made to a structure of science which was the product of the work and thought of the professional as it tends to denigrate the seriousness with which so many of them pursued their investigations. In one of his always stimulating and perceptive essays, Walter Cannon (1978, 152) discusses the complexity of the often assumed dichotomy and concludes that the significant difference lay in the functions between "the scientific observer, who worked according to a general scheme which he understood, and the undisciplined observer, who merely noted everything that occurred to him". But the distinction, like most such formulae, was not

always so clear. At various levels of specialized knowledge, most of Owen's collector correspondents were supplying him with information from their observations or with specimens from their own collections for him to "process" within the grander explanatory system of his own making: it was one which, through his specialized knowledge of comparative anatomy and palaeontology, he controlled. His providers, though generally aware of their limitations, were often highly specialized and "disciplined" in their own observations. Although differences might and did occur in particular cases as to who was what, usually each knew his role in the relationship between the provider of information and its processor. Thus, for instance, Owen, from the very beginning of his career and, specifically with his memoir on the Nautilus (Owen 1832), was recognized throughout his life as an authority, a professional natural scientist, despite serious differences in theory with many of his colleagues and the demonstration that some of his specific finds were in error. As with him, it was the ability to recognize a significant scientific problem and to order a mass of particular observations for its resolution which distinguished the professional from the non-professional and/or amateur. In the end, however, in the absence of formally recognised licensing bodies, the definition of professional was a collegial one dependent upon his publicly recognized accomplishments.8

The case of John Blackwall (1790–1881) is an interesting one in that it represents a common path taken by those on the way to becoming a professional from origins not socially associated with science itself. Blackwall was a merchant/importer with his father until his retirement in 1833. At the age of 43, he devoted his studies to spiders and their webs in which he had become interested as an "amateur", but highly specialized, observer. Responding to an appreciative letter from Owen which "affords me much gratification, no individual being more competent to form a correct estimate

of the facts . . . than yourself", he went on:

For the candid manner in which you have stated your view with regard to the connexion supposed to exist between the palpal organs and the oval glandular bodies in male spiders, conjectured by Treviranus to be testes, and for the important experiments which you have so kindly suggested as a means of testing the accuracy of that view, I beg to offer my sincere thanks. If my anatomical knowledge and manual dexterity in making dissections were considerably greater than they are, for you must bear in mind that I have merely directed my attention to zootomy as an amateur, I should entertain much more sanguine hopes of conducting the experiments which you propose to be made to a successful issue than I do at present; nevertheless it is my intention to make the attempt, but it must be deferred to another year as the winter season is fast approaching. Now as failure to impregnate the eggs of a virgin spider in the manner recommended might reasonably be attributed to my want of skill rather than to my inefficiency in the means employed, it is very desirable that some person better qualified than myself to do justice to the experiments should likewise undertake to try them.

Before I conclude permit me to offer a few remarks relative to your view of the

impregnation of female spiders, which I must acknowledge is new to me.

In the whole course of my observations on the Araneidea, both in their natural haunts and in captivity, extending through a long series of years, I never, in a single instance,

saw a male apply its palpal organs to that part of the abodomen where the supposed testes are situated, and that those organs are not so applied during the act of copulation, however protracted it may be, I have fully satisfied myself by the most careful inspection. Coincidence in the development of the abdominal glandular bodies in male and the ovaria in female spiders does not necessarily indicate an intimate sexual relation between the parts, a change in form of the cephalo-thorax, in the structure of the palpi, and in the relative length of the legs being likewise, in many instances, simultaneous with the arrival of male spiders at maturity; still, I readily admit that the whole of the above evidence is of a negative character, and that it would be more satisfactory to obtain positive facts bearing directly upon the question.

You remark that if the oval abdominal bodies in male spiders are not testes they are without any assignable function; but is this surprising in the present state of our knowledge of the internal anatomy of the Araneidea? Supposing them to be testes, in what degree is it probable, as Baron von Walchender surmises, that they may be connected with the palpalm organs through the medium of delicate vessels traversing the slender pedicle which unites the abdomen with the cephalo-thorax? You will at once perceive the importance of this query in reference to the experiment which you are

desirous to have tried.

Whatever may be the result of my future investigation of this curious physiological problem, I shall have great pleasure in communicating it to you...<sup>10</sup>

Given his specialized knowledge and researches on the spider, it is an interesting question whether, despite his own conception of himself as an amateur, Blackwall would be regarded as a professional. Individuals like himself illustrate the complexity of the problem. Of course, whatever his designation, his work stands as it is. However, as the requests to Owen for testimonials demonstrate, the status of professional, somehow validated and collegially defined, was important in providing the means to continue research and to publish the results. The testimonial itself, so often requested of Owen, was a kind of "laying on hands" by one who was already recognised to have earned the position. That position, supported by his role first at the Hunterian Museum and then at the British Museum, was authority for his use of amateurs throughout the world to supply him with the raw materials which he "processed" into the long list of publications which then provided a continuing validation of his position.

From his early days at the Hunterian, in keeping with his continuing needs, Owen encouraged travellers, explorers, emigrants, and colonial office officials going out to their stations throughout the world – particularly in those areas which were still little known to naturalists – to send him specimens of interest. As Hunter had earlier built his collection, by the 1820s, the Hunterian Museum would send instructions and materials, for the preservation of natural history specimens, with explorers going to Mexico, East Indies, the Bering Straits, and Spitzbergen. It was the return from such an investment of materials and information that provided much of the growth in the collections which were to serve as Owen's research base.<sup>11</sup>

It was through the Bishop of Mauritius, engaged in missionary work on the island, that Owen received the specimens of the Dodo, made extinct by man in the seventeenth century, whose size and ground-dwelling habits held out

some promise for Owen to add, by analogy, to the information on the long-extinct Moas of New Zealand which he had identified for the first time twenty-five years earlier. Until the Mauritius discovery, the Dodo, was known only from a few fragments and a single painting. "My eyes have, at length, been gladdened by the sight of the bones of the Dodo", he wrote to the Bishop on the receipt of the collection, "... And now having gratified my long-felt yearnings to know more about Didus [Dodo], I find those with regard to *Aepyornis* [another ground-dwelling bird suspected to have been alive until recently] growing stronger. Madagascar's marshes and turbaries may yield similar evidences of this gigantic extinct bird ..."<sup>12</sup>

The Dodo bones came to him unexpectedly. Larger and more important collections were assembled and received with his support and, to some extent, under his direction. And there were those, in the field or in the arm chair, who continued to supply him with advice, information and exotic specimens from around the world. It was the role that Owen came to play as the *ad hoc* director of such a comprehensive collecting activity that led him to conceive and to support his life-long passion for the creation of a truly national museum of natural history which would be something more than a mere collection of odds and ends from the natural world. For that purpose, he was always seeking suppliers and welcomed those who heeded his call.

Probably having met Owen in the lounge at the Athenaeum, J.J. Chapman (born c.1790), who had left Ceylon in 1829 with a journal describing its natural history, wrote to suggest how useful it would be to use the British occupying cadre as suppliers of specimens and information:

...I venture to point out to you the facility which exists in Ceylon for collecting specimens in Natural History. There are English medical men... There are native assistants at all the subordinate stations of magistrates. And among the civilians and military there is a very large proportion who would be but too happy to render themselves of aid were they instructed what to do. There are more distinct varieties of the Human Race than are to be met with anywhere with equal facility of examination.

Some of the quadrupeds are worthy of particular attention. The horse and sheep for instance which rarely if ever bring up their young on the island. And the reptiles are very numerous and some peculiar, as the land leech first seen by our party at an elevation of nearly 2000 feet above the level of the sea at Doombrah Pass.

When about to leave the Island I requested several officers to kill animals and to allow the white ants to clean the skeletons. They were requested to bring them and leave them. Immediately a large male elephant and an alligator eighteen feet in length were treated thus and I had only to wait until my white friends had [completed] their task to go to the spot that I might collect and number each bone.

I mention this to prove how willing the military are to make themselves of use. Indeed I am convinced that you will confer an obligation on them by giving them some occupation to break the dull tedium vitae – that of a solitary European in the midst of jungle.

Experience induces me to say that if plain and concise instructions for the man who contents himself with obedience of orders were drawn up in the first place – and then that instructions for the amateur were added – Natural History would be greatly advanced by enlisting the military in the cause.

The mere lines which were a few years ago amusement only might be made useful to convey *character*, and this in the least educated class...<sup>13</sup>

Chapman seemed unaware that, commissioned by the Admiralty, such a series of instructions, of which Owen was one of the contributors, had been

published two years earlier (Owen 1849).

Robert Playfair (1828–1899) (later Sir Robert Playfair) going out to Zanzibar as a young man still to climb the career ladder in the Foreign Office, in sending him a specimen of a "strange fish" for identification promised that. "If I can be of any use to you at Zanzibar, you may command me". 14 Others, such as Joseph Portlock (1794–1864) in Cork, sending on a box of fossils from a cousin in South Africa, 15 promised that he would send on materials received from relatives or associates in the colonies or abroad who were always on the lookout for fossils or specimens of natural history to extend the knowledge of the natural world through Owen's identifications. More spectacular were the specimens of the Moa which, over more than two decades, William Williams, Walter Mantell (1820-1895) and Julius Haast (1824–1887) sent from New Zealand to London. The publications for which they provided the documentation gave Owen one of his most important triumphs.16

One of the great collectors was Hugh Cuming (1791–1865), who during the two four-year expeditions to the South Pacific, South America and the Philippines, amassed what was probably the largest and richest collection of shells either in private or public collections (Gunther 1912; Dance 1980). His letters to Owen describe the true collector – excited by his discoveries, aware of his professional deficiencies but hoping nevertheless that he will have been successful "in adding a mite to the scientific stores of my native country". 17 He was fearful lest the specimens get in the hands of persons who were not sufficiently competent, while making them available to those who were; he was also subject to bouts of depression at the continuing isolation away from friends and countrymen, but always excited by the results of his search for the novelties of Nature. "The Island of Luzon is a perfect paradise", he wrote not long after arriving there to begin his collecting, "and to me a Heaven and I trust I shall be able to produce to you many of its products that will afford you great pleasure."18 And in much the same vein more than half way through this, the last and longest of his three collecting expeditions, he says: "Not a day passes in my Paradise . . . but you are brought to mind and whenever I find anything that I think can be of any service to you it affords me the greatest pleasure. 19 Cuming was aware of both his limitations as a professional scientist while at the same time proud of the important contributions he was making to Science.<sup>20</sup>

The settled colonies of New Zealand, Australia and South Africa, with their institutions copied from and, to a great degree, dependent on those in England, provided Owen with his greatest prizes. It was perhaps the isolation felt by the rare "professional" which forged the relationship between himself and his few loyal suppliers abroad who, as they regarded London as the centre of their realm, saw Owen as the great authority to

whom the data from their more limited investigations were due.

Despite the claims of those who, by the end of the first guarter of the century, felt that the state of English science had fallen far below its former eminence, by mid-century whatever decline there had been was halted. English science was again paramount and a source of inspiration for those on the continent and in the expanding network of the colonial empire. While the declinists failed in their attempt to redirect the London-based establishment through a reform of the Royal Society in 1830, the effect of that narrowly defeated movement was everywhere in evidence during the 1850s. This included: the formation of the British Association for the Advancement of Science in 1831 and its subsequent success in shifting the locus of scientific discussion and interest away from London and, by its peripatetic structure of annual meetings, through the provinces (Morrell and Thackray 1981); the long-delayed reform of the Royal Society in 1848; the emergence of a number of specialist societies; and the reorganization of the intellectually and physically cluttered natural history departments of the British Museum under Owen's direction. These changes all reflected the real structural and intellectual advances which had occurred in a single generation during which a newly conceived English science was reaching for its maturity.

During the same period, of course, Britain, fuelled by the successes of the industrial revolution, became the foremost economic and political power in the world. Its dependent colonies were on every continent and its cultural influence everywhere. It was in the colonies in particular – and in the United States where, despite a strong push for intellectual independence, a strong cultural current flowed from Britain – that the social and cultural influences from the "mother country" were felt most strongly as each colony sought to reproduce in its own institutions those which seemed to serve so well back home. Inevitably guidance or personnel, often both, were sought from London, by those who, with little support, sought to recreate the institutions of science and culture which for many were the mark of civilization, the source of light brought to the dark corners of the earth to which, so the ideology went, the responsibilities of a progressive and humane society had sent them.

Owen was a natural recipient of such requests for guidance and, more often, complaints of local conditions, as he was, too, of the fragments of natural history information that were continually sent to him by travellers and administrators who held the colonial network together. Both as Conservator of the Hunterian Museum which, by the 1850s, he had transformed from a collection into one of the finest natural history museums in Europe and, later, as the Superintendent of the newly established Natural History Department of the British Museum, he was regarded not only as a major scientific figure and authority but as one with a special interest in museums as well. His goal for most of his career was to create a national museum – more imperial perhaps than national – which would bring together, through its organized collections in the empire's capital, a microcosm of the whole of organic Nature. Although, sometimes despite persistent invitations, he never

visited any of the colonies whose novelties interested him so much, he depended upon the occasional local collector-naturalist for both information and specimens which were the raw materials for his research and for the visual textbook of Nature which he wished a national museum to become. He reached out to the colonies and to those there whom he could help and, of course, who could help him in the achievement of his goal.<sup>21</sup> Along with bottles, crates and barrels of specimens, he received on occasion perceptive descriptions of local conditions of both a general nature and the particular state of science and the difficulties in its practice.

Ludwig Becker (d. 1861), a German artist and friend of one of Owen's German correspondents, took the opportunity of sending some specimens for his friend, to describe something of the situation in Melbourne in 1855:

Science and Art are very dull here (to use a tradesman expression). The Government, in a penny wise and pound foolish way, is doing away with all establishments not quite necessary for the daily bread, for the purpose of saving money. The Museum for natural history, only one year old, but in fair progress, is to be closed – the Curator discharged. The Government Geologist discharged. Dr. Mueller, the well known Government Botanist, discharged. With regard to this highly-respected gentleman, who at this moment is in the Australian Alps on a Botanical excursion, and not aware of the death blow awaiting him, it is considered a great injustice. Sir W. Hooker will learn this with some astonishment. The English army was repulsing the Russian in the cold fields of the Crimea and in the gold fields of Victoria the English Navy (our Government is a Man of

War man) was successful: art and science are repulsed! . . .

Our surveyor General Capt. A. Clarke, R.E. is one of the few here in the Colony who takes a high interest in everything connected with science, art, and industry. He is the president of the Philosophical Society of Victoria, which institution (only a few months old) has not yet means enough to do what under more favourable circumstances (I allude to the Estimates) it is able to accomplish. Capt. Clarke was also one of the chief promoters and one of the Hon. Secretaries of the Melbourne-Paris Exhibition. Apropos Paris Exhibition. I was 5 months engaged in buying the fine specimens of Gold . . . in Paris; I was further employed in arranging the things exhibited here, and was very anxious to do all I could, by supporting the Commissioners, that the Colony might be properly and creditably represented in Paris. I prepared myself a collection of natural History and a great number of pictures of the Colony to give at Home as good an idea of this Land as a single individuum can. I was prepared to go to Paris as a Commissioner and I had some hope of being appointed as such - yes, appointed but dis-appointed, because I am a foreigner! I expended 5 months for nothing (of course I made no agreement) and my thanks is to hear: Becker is an artist and as such he knows nothing of business; he doesn't know how to deal with the Government, that stupid German. Well, a Mr. Bell was sent Home and this was sufficient to induce me not to send a pennyworth to Paris, believing that my things would be put in the best shade in the worst state. I wrote during the exposition a few lines on the Gold, but it was not allowed to be given, gratis or not, to the public in the Exhibition building, because a non-commissioner and foreigner was the author...<sup>22</sup>

Australia, however, a vast continent apparently difficult to tame, had more serious problems at mid-century than the search for fossils or specimens of its still strange fauna, which had seemed to some earlier observers to turn Nature upside down with mammals which laid eggs and swans which were black. Sheep, thousands of them, were more important than platypi and gold

was a greater treasurer than the rarest fossil. Still, for the palaeontologist, treasures were everywhere waiting to be plucked from the earth. If only there were time – and money. Sending Owen a small collection assembled by his son, Francis Campbell, the director of the Tarban Lunatic Asylum in New South Wales, described the gift and its provenance with the diffidence of those who, with some sense of their importance, felt it their duty to submit their riches to the judgment of the great man in the Metropolis. His son, Campbell wrote,

... is perfectly ignorant of fossilology, but he is of an enquiring turn of mind, and seeing them by accident, as he was riding past, sticking out of the bank of the creek... he exhumed them the best way he could, and with as much care as consistent with time and implements which were a knife and an old shovel borrowed from a neighbouring hut. His time is so fully occupied in his important charge – 10,000 head of cattle and 20,000 sheep etc. etc that he can ill spare even an hour to make excavations in a careful and *scientific* way. But it appears to me that a rich harvest might be reaped on those beautiful downs by anyone skilled in the business, and favoured with the means and the leisure, which are so necessary for researchers of this kind in a new country where labour is scarce and consequently dear.

The bones he mentioned in the letter and whose likeness is also enclosed herewith, I regret to say he was induced to part with to a gentleman to whom he was under particular obligations of friendship, and who had expressed a great desire to possess them

The soil in which these bones were imbedded is a course red friable sandstone. The *sacrum* was disinterred entire; it is now broken into three portions and sadly chipped and broken by the transport in a cart from the spot where it was found a distance of ten miles to his residence; but I have sent all the splinters, packed here and there in sawdust, wherever they could be safely inserted. There are also some teeth, a rib or two, and what appears to me to be the cartilaginous portions of two vertebrae of the same animal, whatever it was; and a few other osseous fragments as hard as stone.

Campbell's son was hardly a collector and, as his father said, perfectly ignorant of 'fossilology'. There were few who were knowledgeable enough to have some sense of the importance of Australia's fossil deposits to science. Those who did, sent or brought their specimens to Owen for his identification and description. William Clarke (1798–1878) was one of them. He had sent an important specimen to Owen as early as 1847; fifteen years later he was still waiting for the information he had hoped to receive. But he sent details of other finds with an apology for what Owen might take for impertinence. "But Geology in this Colony," he wrote, echoing Burmeister half a world away, "is pretty much confined to myself – and I have to give home friends trouble from want of others here". There were those who had sufficient knowledge and will to provide Owen with both the specimens and the information to fill out the gaps in the knowledge of a divinely inspired Nature. But always, it

was a lonely enterprise for the colonial scientist or enthusiast with few or no associates and a precariously constructed establishment to support him.

George Bennett (1804–1893). Owen's exact contemporary, was one of the most devoted of such providers from the colonies. For over 50 years from his first vovage to Australia to begin his career as a medical man, Bennett, who had known Owen at the Royal College of Surgeons and was perhaps an auditor of his lectures in comparative anatomy at St. Bart's, provided Owen and the Hunterian with specimens and information about Australia's natural history, particularly on the monotremes which were a subject of a long-continued research interest for Owen.<sup>25</sup> As age and his medical practice limited his own activities in the field, Bennett, a stern parent, transferred to his son his passion to provide the information which would allow Owen to solve the vexing problem of monotreme generation. While dutiful, however, to both his father and the master he had never known back in a country he had never seen, the son could complain of the difficulties he encountered in collecting specimens of both the platypus and of the fossils which since the 1840s, Owen had been receiving from Australia. Their analysis promised some understanding of the history of both marsupials and monotremes. George Frederick Bennett's interests in natural history could not compensate fully for the practical difficulties which faced him and his family. Among the letters he wrote to Owen, the following is the plainest expression of the burden his father had placed upon him.

Your note of the 23rd April came to hand and I was pleased to learn by it that some of the specimens were valuable and moreover that still something can be got that is new.

I have the second case 2/3 full and hope soon now to have it on its way to you. It contains several portions [of] upper and lower jaws of Diprotodon, a fine Atlas and many Jaws of Kangaroo, I have a fine jaw of Diprotodon which I hope to get in from Clifton at an early date so as to complete this case when they will all be sent to you by the first ship. We have had again some heavy floods and I fancy I shall then be able to get some more specimens all of which will be sent on as soon as possible. The protracted drought has prevented me from doing much until very lately. With respect to the 15/ you speak of I was under the impression that my father had received it but if such is not the case I should like it to be devoted to paying for some work or periodical bearing upon Natural History as if I may not reap the benefit of them my children may do so. I have all my plans ready to commence work on Echidna during the months of August and September when I hope to be able to complete the subject of their oviparity. My Father is in Sydney but I have heard very little from him. I suppose I am in the black books again as I do manage no matter how hard I work for him to get in those, which sometimes disheartens me and makes me inclined to give up my studies of Natural History as I only commenced them to please him some way or the other, as I never could otherwise as he has been a most stern parent to me as I have not been fortunate enough to marry [a] girl with plenty of money which seems to be the hope and aim of his wife's desire for us. You will excuse me saying this to you as it is a relief sometimes to say it, and I know you will not repeat it. I have been most unfortunate in having a good deal of sickness in my house and I have had to mortgage my house for £150 and I have suggested his helping me but no that cannot be done, he cannot afford it and I am unbraided for extravagance which if he was to consider if I was clear I could live comfortably on my salary and have both time and mind to devote to Natural History as you cannot give study [to] your thoughts when the cares and difficulties of pecuniary embarrassments are continually coming uppermost. I

hope you will not mention this as I only do let you now that you may understand the cause of my failures may not be from the will but from the present inability (pecuniarily) to take them up.<sup>26</sup>

Sad, that; but Owen apparently replied sympathetically, for, upon its receipt, George Frederick wrote: "Your kind letter has given me quite a new life to push on and do what I can as to be ranked among the best contributors to the materials for advancing Science is one thing that ought to please my Father" 27

The contributions of the Bennetts, father and son, to Owen's research and to the collections in the Hunterian Museum and the British Museum, through more than half a century paralleled in another vast unknown palaeontological province those of A.G. Bain (1797–1864) and his son Thomas (1830–1893) from South Africa. The elder Bain was a surveyor, employed by the colonial government of South Africa to construct roads across the Karoo plain stretching to the northeast from Cape Town (Lister 1949, Aulie 1974). As he and his workers pushed their way across the plain, they exposed fossils from the Triassic beds which, collected and transported with difficulty, Bain sent to the Geological Society of London in 1844. From this collection, Owen described the *Dicynodon* with its anomalous dentition which he regarded as belonging to a new sub-order of the Sauria although he was surprised by some features which seemed mammalian (Owen 1844, 1855, 1855a).<sup>28</sup> Little work on the collection followed for another four years leading Bain to wonder what had happened to his collection and Owen's promise to continue its analysis.

"The want of books is a great drawback to me here, as well as the want of kindred spirits to converse with," Bain wrote, repeating the complaint which Owen heard from a number of his correspondents isolated in the outposts of the empire.<sup>29</sup> Urged by Owen to describe in greater detail both the sites of his discoveries and the specimens in his collection, Bain was pleased to send to the Society his "long promised Geological Map and Sections of South Africa" with a catalogue of his collection and a memoir on the geology of South Africa. And to Owen he repeated his request for the "aid of your powerful talents to assist in the deciphering a part of my collection, that something may be known of the habits of the wonderful animals composing it; and trust that you will kindly comply with that request as soon as your onerous and important avocations will allow you time". 30 Although Bain continued to pick up fossils where he found them, his Memoir seems to have capped his geological activities while he still waited for something of a final report on the collection which he sent in 1844. A year before he died in 1864 at the age of 67, he regretted, "that, from growing old age and the total want of any kindred spirit to assist me, together with the paucity of fossils in the great work upon which I am now engaged, have prevented me, for some time back from doing anything in the Geological way". 31 Owen himself, busily occupied with fossils from Australia and those of the Moa from New Zealand, did nothing with the South African materials, particularly the important Dicynodon, for a decade and then only occasionally.

Having read, a dozen years after his father's death, Owen's description of *Cynodraco*, a carnivorous mammal-like reptile pulled out of the specimens sent long ago, Bain's son who had followed him as road builder offered to continue his father's geological work. As a boy, Thomas Bain had accompanied his father on his trips to the Karoo picking up loose fossils as they went along. For him, as for so many of Owen's collectors, fossil collecting had become something of a passion. "Long experience combined with a natural love for that sort of work, gave me rather an advantage over amateurs in collecting . . . [who,] although they traversed some of the *rich* fields, found nothing worth mentioning."<sup>32</sup>

In 1876, he wrote to Sir Henry Barkly (1815–1898), the governor of Cape Colony, offering to put his experience at Owen's disposal in making a collection which would extend that made by his father almost forty years

earlier:

It may not be out of place on my part to mention to you, for the information of Professor Owen, that in my frequent rambles through the Karoo, I have placed my mark on – I may say – scores of fine specimens which were unfortunately out of my power to dig out and carry along with me, as I generally travel with a light Cart, and am unprepared to exhume such monsters as some of them are. Some time ago you were good enough to send me for perusal a letter you had received from Professor Owen on the receipt by him of the fossil arm or paddle I sent you from Graaf Reinet, and, in that letter, he mentioned that there was a scanty collection of South African Saurians in the British Museum and seemed anxious that it should be augmented [Owen 1876]. If the Professor would authorize a small Outlay, I would undertake, provided the Government would grant me a couple of months leave of Absence – to go with a Bullock Wagon to the Karoo to make a large collection for the Museum, out of which Professor Owen may probably prosecute his discoveries still further. The months of September and October are the best for Oxwagon traveling in the region where fossils are most abundant.<sup>33</sup>

Barkly replied enthusiastically and requested a budget. Bain in reply estimated the costs of wagon, oxen, four assistants and a 10/ per day allowance for himself to come to about £300 assuming that the wagon and

oxen could be sold upon his return.

Noting the importance to Geology of the collection for which the Museum's Trustees had awarded A.G. Bain a grant in 1852, Owen in supporting the new request, wrote the Trustees that, "it may confidently be expected that additions will accrue to the Geological Series [in the Museum], equal, at least, in instructiveness, rarity and value" to those received from the earlier grant. "Particulars of the organization of many new types of Reptilia hitherto indicated only by cranial and dental characters, will be supplied by the collections so proposed and obtained and transmitted . . . [and] that it is only by encouraging and taking advantage of such opportunities that the complete restoration of these rare and strange accessions to animal forms can be effected."<sup>34</sup>

Although, the expedition was delayed by drought, Bain left Cape Town for the Karoo and his fossil hunt on 12 November 1877. The three letters which he sent Owen illustrate very well the difficulties which faced such

collectors and their dedication in the face of them. About to leave, Bain wrote to Owen:

... merely to let you know that I start tomorrow for Beaufort and Graaft Reinet for the purpose of collecting the fossils which I have been requested to do. The great drought in those districts has hitherto completely debarred me from going but now it is more or less broken up and I shall do my utmost to make a good collection. The only thing yet in the way is the enormous price of forage and transport in the interior, which will soon reduce the funds at my disposal. I have purchased a cart, a pair of horses and harness and have engaged two men – one as Coachman and the other to assist in taking out the fossils. In fact I have to cut my coat according to my cloth as there has only been £200 allowed while I estimated I think something over £300 to make a start with, when everything was plentiful. I shall, however, if I run short pay for the plant myself, in order to have as much of the amount allowed at my disposal for transport and other incidental expenses.  $^{35}$ 

Returning three months later to Cape Town, he immediately wrote to Owen of the search:

I returned vesterday from the Karoo, and considering the great drought from which the country is suffering, and the consequent scarcity of water and forage, etc., I have been tolerably successful. I have collected about 280 heads in all, mostly small ones, but I trust, none the less interesting on that account, as they are generally in better preservation than the large ones. I have also taken out the almost entire skeleton belonging to the large head Sir. H. Barkly wrote to you about, which I discovered about eighteen months ago; and I have got a quantity of large bones (some very fine specimens) together with portions of the skulls belonging to them, showing by the teeth their species. I have also got some very fine vertebrae of large reptiles, and some fossil wood of different kinds to show what the Karoo beds contained in former ages. Besides what I have collected I found several large fossils embedded in the blue shale, and ascertained by trustworthy farmers also of localities where fine specimens are embedded; but owing to the want of water and forage I reluctantly had to give them up for the present. I hope, however, now that I have got a large Mountain Pass to make in the fossil locality - which I shall have to visit every four of five months, to secure all those specimens for the British Museum when the season is more favourable . . . if single large bones were of any interest I could have collected wagon-loads, but I went in more for the skulls. The Boers and their shepherds systematically destroy large quantities of fine specimens by smashing the bones to see what there is inside, and the skulls to see what the teeth are like. Several of my best finds which I had marked last year were thus treated. One was a perfect skeleton, all smashed.36

A few months later as the eight cases of fossils were ready to sail for England, Bain wrote a fuller account of his discoveries and the impressions which their provenance made upon him:

With regard to the Collection, I would wish to remark that it is not nearly so good as I expected to be able to send to the Museum but I had to contend with so many unforeseen difficulties that I hope every allowance will be made if it does not realize your expectations. For instance, severe drought was prevailing of the very worst form while I was engaged in my researches which more than doubled the prices of forage, supplies for the men and transport, and in some cases brought me almost to a deadlock, as I did not wish to go beyond the authorized amount. In consequence of these drawbacks I had to abandon several fine specimens which I could not exhume for want of water for the men; and many fine specimens which I had previously spotted for taking out on this

tour were destroyed by wanton Boers and shepherds who amused themselves by smashing all the skulls to pieces, to see, as they say "what the teeth are like," and also to find out whether the bones have marrow holes in them. One tooth in Box No. 7 is the only whole member of a fine skeleton I had previously begged of them not to disturb and even offered them payment to let it alone, but it was all smashed.

I regret my incapability, being only an amateur, of giving you a proper geological description of the tract of country the collection was made in . . . [From the distribution and nature of the fossils] one would almost imagine the Karoo to have been a vast shallow lagoon with a profusion of vegetation on its shores . . . and numerous little islands

... I first thought the waters of the Gough in the supposed lake were deeper and consequently better adapted for the larger reptiles, but the fossil wood, vegetable impressions and ripple-marked rocks dispelled that idea altogether. The head in Box No. 6 marked "New species of skull" – I fancy is not described in your Catalogue. The teeth are curiously arranged and the orbits of the eyes are so differently set from the generality of them. The locality it is found in is rich in fossils, but for want of water and the excessive heat I could not remain there more than a couple of hours . . .

Not one-hundredth part of the area comprised between the boundaries shewn in the "Catalogue" has been searched by me; to do so properly would be the work of a couple of years and would no doubt lead to most important scientific results. I had merely to hurry over by the best available routes and to collect specimens wherever I saw them, and from what I was able to judge from the entire area it is highly fossiliferous. I merely mention this that in case at some future period a regular organized search should be in contemplation, to give you some idea of the country. My old haunts at Graaft Reinet and Snieuwberg, where, as a youngster, I spotted many valuable fossils, only gathering loose and portable ones for my Father, I was also debarred from visiting by that fearful drought, which has made a vast difference to my collection . . . . 37

Except for a single visit, the elder Bain and Bennett had never returned to England since their departure when young and although their sons, born in the colonies, had never seen the "mother country" at all, for the most part their cultural allegiance was still to England and its institutions. Generally sensitive to their isolation as contributors to science in societies which lacked the literature, the institutions and, except for a brief interval now and then, the local interest to support it, they sought their fellowship with those back in England who were actively pursuing the science in which they wished to participate. Lacking the resources to process the raw material available in the natural world around them, they were dependent upon the authorities back home to direct them in their collecting and to make sense from the materials they provided. Thus, science too obeyed the colonial rule which had proved so successful in the development of England as the primary economic force in the nineteenth century - the colonies to provide the raw materials and markets and the "home country" the capital, the expertise and the processing. As the letters from both the Bains and Bennetts illustrate, it was a role which the colonial providers accepted with little question. Authorities like Owen at the British Museum and W.J. Hooker (1785–1865) at the Botanical Gardens at Kew encouraged and welcomed the arrangement as did their partners. In Owen's case as in Hooker's, it served not only to validate their own sense of the naturalness of the colonial system, but also to help them to realize their long-held concept for the establishment of national institutions which would serve the Empire as centres for natural history at its political and economic centre of London. So long as the providers, far off in the colonies, identified themselves with England rather than with the particular colony in which each worked, the system was an effective one for both provider and processor. Each, although hierarchically distinct, recognized the value of the other. Encouragement, instructions, supplies, sometimes funds and, in the end, interpretation, publication and recognition came from London; fossils, natural history specimens and information came from the colony.

With the emergence of a sense of national identity in the colonies during the last quarter of the nineteenth century, however, and with the rise of a citizenry whose members had never seen the "mother country", the close interdependent tie between the London professional and the colonial collector weakened. Local institutions, however unsatisfactory they might be,

claimed a greater part of the local collector's time and interest.

Such distancing from London was particularly true to those who had wandered from the continent to the colonies to seek their scientific fortune. Iulius Haast arrived in Auckland a few days before Christmas, 1858, in search of a vocation, just in time to meet Ferdinand Hochstetter (1829-1884), the naturalist aboard an Austrian exploring vessel. Persuaded to stay on to make provincial geological surveys, Hochstetter engaged Haast as his assistant. During the following year, Haast became a geologist and naturalist. Settled in Christchurch in the recently established Canterbury, Haast soon became the acknowledged scientist for the province (Haast 1948; Gruber 1987a). If he had a national and personal loyalty other than that to his province and to New Zealand, it was to Austria and his first patron Hochstetter to whom he owed his training and his position. Although he admired the stars of British Science<sup>38</sup> with whom he established a continuing correspondence and although he came to feel himself a loyal member of the British community to whose scientific institutions he felt tied,<sup>39</sup> his primary loyalty – aside from that to the pursuit of his own career - was to the province and to the colony. He was active in the development and support of the institutions in both. By the 1870s, although modelled after those in England, they provided a substantial base for a movement toward some degree of intellectual independence from England's control.

For more than a decade, Haast, like others in the colony, had provided Owen with material from the natural history of New Zealand, particularly that relating to the Moa upon which Owen based much of his continuing research on that extinct avian group. The relationship was that which characterized most of the colonial collections: specimens and data from the collector, analysis and interpretation by Owen. Neither Haast's ego nor his sense of provincial responsibility could long endure that type of relationship.

Through the decade that Haast had been supplying Owen with *Dinornis* remains as well as building up his collections at the Canterbury Museum which he had founded, he felt that he had achieved a competence recognised by colleagues in England and on the Continent. He believed this entitled him

to deal almost as an equal with Owen in matters concerning the classification of this large and variable group of extinct birds as well as the kinds of materials he wished for his museum in exchange for what he supplied to the British Museum. In the latter case, he agreed with the trustees of his museum that Owen should have first preference for the prized specimens, "in order not only to continue your classical publications on the subject, but also as a fine representative of New Zealand in the national collections". Nevertheless, he thought Owen's offer of casts in exchange was niggardly; and in a response to a letter in which Owen suggested that he could do without Haast's interpretation of some of his specimens which go beyond simple transmission and information as to their provenance, Haast politely but firmly made the case for his independence from London:

... I had a full meeting of the Trustees of this institution and they fully endorsed my view, that unless the British Museum can offer us *adequate* returns for the fine skeleton of *Dinornis maximus* I sent you, and which is worth to us at least £200, you have to consider it as a loan and will be good enough to return it to us as soon as you have described it. I shall not point out the value of such a specimen to the British Museum and I am only astonished that an institution with such enormous means should not try to obtain such a specimen as I offered for exchange when thousands and thousands are spent on Antiquities, the more so when it is sent by a provincial Museum of a comparatively small colony.

From your observation, "I am induced to suggest that if my kind friends would trust me to determine other points besides "time and place in relation to specimens transmitted" I must conclude that you wish me to send you all the specimens unclassified, such as you received from [Walter] Mantell and others and this brings me to

a point, which I wish to clear.

In your last paper "On Dinornis" . . . you are kind enough to speak of my labours and that I was able to *match* the bones, those described by you: this is hardly the whole.

I with my assistant have articulated from the material at our command and afterwards have matched them with those described by you; but in many cases this was impossible,

as in many instances you have named only portions of skeletons.

All along I have felt that I was in a wrong position, and although my friends urged me on to describe all new species and portions of species named by you, by which many points would be settled, I have refrained from doing so not only as a proof of my respect and veneration for you, but also, feeling that I should never be able to reach the classical standard of your labours. On the other hand, "loyalty and truth" as you express yourself, compels me to point out where I think your conclusions are not quite correct.

I may in many instances say "I am certain", having obtained the specimens in situ or

have such material that error is impossible.

his descriptions and inferences.] Thus I do not know how to act and as I am willing to send you all our type specimens for description, of course with the understanding that they are considered as such; of course I am open to correction, and shall only be too grateful for the sake of truth and my own, if you will do so. But I would not do my duty in this country nor to myself if the result of my own labours would be altogether passed over. After having devoted years of close study to our extinct Avifauna, I owe it to myself that at least portions of such results should not be overlooked. You yourself can hardly expect, who have done *more* than anybody else to propagate the study of Comparative Anatomy, that we in the Colonies do not claim at least a share in the future labours. If the study of your works for many years constitutes a pupil of yours, I can fairly claim to be one of yours, although I have not had the enjoyment "to sit at your feet" and I shall always try that I shall not be unworthy of such a claim ... 41

Haast continued to complain of the meanness of the British Museum in its relations with the colonial museums and, in fact, sought with some success other trading partners both in England and on the Continent to supply his needs.

Whether chastened by Haast's complaints, or recognizing himself that the larger and more settled colonies were producing local naturalists competent to exploit their own resources for the benefits of science; or whether harried by the prospect of the opening of the new natural history museum and the need to complete his research projects, Owen now seemed ready to acknowledge the competence, the obligation and, in fact, the right of a younger generation in the colonies to pursue their own work. Writing to Professor Halford at the University of Melbourne to announce the publication of his collected papers on the fossils of Australia (Owen 1878), Owen noted that he had just heard of a possible grant from the Government of Victoria in support of his publication. "I never heard of such grant," he continued,

although I knew that the Government of New South Wales and South Australia urged the case as a deserving one on the favourable consideration of some individuals in Power, at Melbourne, a few years ago.

With the work before them they (your Ministers) would have better means of judging its claims for encouragement by an Australian Legislature. It has been written and illustrated expressly with the view of giving an aid indispensable to Colonial-born Palaeontologists, who may, as in the United States, rise to the work of making known the Natural History of their mighty native land. Should the Author be deemed to merit any recognition akin to that voted by 'N.S. Wales' & 'South Australia,' it would be more welcome to him in the form of an order to purchase copies for deposition in the Public Libraries of the Colony.

But this should be done promptly, if at all. Because – seeing the cost of printing off 132 plates, some of them large folding folios, – I limited the number of impressions to 100; & of these 90 only are (or rather were) for sale, & the demand from Continental Libraries, etc. is very great. It should be a grief to me to have few or none left for Melbourne. 42

#### Collectors: local

Although it was the Bains in South Africa, the Bennetts in Australia and Haast and Walter Mantell in New Zealand who provided Owen with the largest bulk of those fossil specimens upon which he built much of his reputation through a long series of articles, it was a host of small collectors throughout England who continued to write him and send him what they found in their own neighbourhoods. It was this hardly organized army of amateurs, with their various talents and knowledge, who sent him their prizes for identification and recognition. As one of the most loyal collectors wrote: "We have abundant evidence that you are ever ready to do good, and to impart knowledge when your aid is called for".<sup>43</sup>

Even to some of his less amiable colleagues, his erudition seemed continually to throw new light on the whole of Nature. As one of them wrote

before the theoretical arguments of the 1860s shook the foundations of his reputation, "Under your touch every thing falls into its proper place". For both amateur and professional, Owen had become the expert in the transformation of those fragments collected from the eroding cliffs and newly opened quarries into the living populations which had occupied Britain during those vast eons of time which the geologists had created. For the amateur in particular, he was a magician from whose eye and touch the scattered bones could be put in place and the long ago past brought back to life. And for some, whose eyes were on the present as much as on the past, his was the authority which could aid in the sale of specimen or collection to private collector or museum.

More particularly, he had become the expert on the large number of reptiles which, for more than a hundred million years, had occupied the swampy deltas and lowlands of southern England. From 1838 when, with a grant from the British Association for the Advancement of Science, he had made his rapid survey of the numerous collections of the remains of the long-extinct reptiles in England and Ireland, he had become the expert on the vertebrate fossil history of Britain. From the mass of unorganized information elicited from specimens scattered here and there which thirty years of collecting had produced, he created a classificatory order which was in great part a product of his synthesis of comparative anatomy with palaeontology. Even those, who, like Gideon Mantell (1790-1852), protested against what seemed a proprietary control over the whole of Britain's vertebrate palaeontology. recognized in his competence his right to the position. For the collector, whatever his passion and term of interest, Owen was the authority. For the most part it was his imprimatur which counted. It was he whom they wished to examine and to name the specimens over the preparation of which they had so lovingly laboured. James Carter (1813-1895), a young man working with Sedgwick at Cambridge wrote thanking him for the care with which he had returned some fossils sent for identification:

... I also beg to thank you for the very kind way in which you have done me the honour to speak of my humble services to the cause of Palaeontology; I do indeed feel most deeply interested in the subject and am much gratified that it has been my good fortune to have been able to collect the remains of as many as six of our Cretaceous reptiles, and I am far more gratified that you have done me the kindness to make known to geologists the truths and facts revealed by those remains, and thus giving my labours an importance they would never otherwise have had, and also enabling me to assist – although in a very humble capacity – in the advancement of my favourite science. I again beg to thank you very much for the valuable information you have given us relative to those extinct creatures of which these interesting remains once formed a part. If it should again be my good fortune to meet with similar objects, I do trust you will allow me the privilege of consulting you respecting them.<sup>45</sup>

Owen himself was not a private collector. Offered items for "his own collection", he refused, suggesting to his correspondents that they present their collections to the Hunterian or the British Museum. However, he did

enjoy an occasional outing. Replying to a letter from an old collector friend in Sussex, in the heart of *Iguanodon* country, he:

... recalled happy days long gone by, not to return, when my dear friend Fred. Dixon used to summon me to the exposed beds at Bracklesham, and we rambled in the pure bracing breeze, pitting against each other our stores of remembered lines from Milton & other choice spirits, revelling over our acquisitions, & feasting on the fresh lobsters newly boiled at the homely hostel. But I never recollect such a haul as yours seems to have been. The reptilian jaw of course interests me much; it revives a hope of penetrating further into the effinities of Palaeophis; yet the length looks rather like some crocodilian.

At my last lecture I endeavoured to do honour to your magnificent acquisition of the Vertebra of Megalosaurus. Today I shall cite your excellent & acute remarks on the trifid foot prints; accept my best thanks for the Copy of your Memoir.<sup>46</sup>

Despite the occasional jaunt with his friends however, Owen was not a field man.<sup>47</sup> It was this in fact which distinguished him from the naturalists like Darwin whose area of research he considered distinct from but complementary to, and maybe even somewhat less scientific than, his own. The dissection laboratory was his "field" and it was crowded with fossils sent to him from everywhere and the corpses, sometimes the stinking corpses, as his wife described them, which died at the Zoological Gardens of which, after some argument, he became the chief dissector.

During his annual vacation which was usually timed to fit the annual meeting of the British Association or during a few days away from London for a lecture or two at one of the provincial natural history societies, he managed to visit collectors and to examine their collections both on his account and on theirs. Thomas Hawkins (1810–1889), who had been trying without success to have the British Museum purchase his latest collection, had hopes that with a recommendation from Owen a deal could be made. In June, 1842, while Owen was examining collections to prepare the first part of his report on British fossil mammals for the British Association, Hawkins, promising the ripening strawberries as an inducement, wrote to Owen inviting him to come see the local treasures:

I shall esteem it a peculiar honour to be allowed to contribute in any way – whether from my "folio" or my new collection or both – to the Great Work you are about. It is also a peculiar happiness to me that I should be enabled to render you any assistance in any undertaking whatever; and if I do not better express the sentiments which animate me towards you, and my sense of the obligations under which I stand, you will attribute it to no fault of my own.

[Recommends his examination of the fossil saurians of a friend.] I am sure that you will not allow them to be lost to the B. Museum, if no better excuse be made of them than a want of room. Mr. Forshall has written acknowledging my last note, and promising to lay it before the Trustees at their next meeting. Oh! how I wish they would call upon *you* to arrange my magnificent sea-dragons for posterity. I should then be satisfied, for you would rid away the rubbish and increase their value tenfold. As my collections now appear I am really ashamed to look at them; nor can I flatter myself that anyone but yourself can do them justice. I am convinced that eventually they will invoke you, (perhaps before Mr. Koenig dies) your forthcoming work will accelerate the event.

Having done so much to deposit my collections in the museum, I confidently trust that

you will assume a *decided* attitude in defense of my third and *last*. I shall not trouble you with my reasons for collecting no more, but simply say that my passion for saurians is extinct  $\dots^{48}$ 

The largest number of the amateur collectors who provided Owen with the materials upon which he based his research were small-time collectors exploiting the resources in their immediate neighbourhoods from which they assembled their collections. Sometimes the interest lasted a lifetime; for others, as with Hawkins, it passed after a few years. In many cases, their collections were given or sold by themselves or by their heirs to the local museum or institute. There were, however, wealthy collectors who assembled major collections which rivalled those of the large museums. Two of them, Sir Philip de Malpas Grev Egerton (1806–1881) and William Cole (1807–1886), the 3rd Earl of Enniskillen, had, by the time they died, put together two of the finest collections of fossils in Britain. 49 They were close friends. As students of Buckland at Oxford, they had become passionately interested in geology and what was to become palaeontology. Through Buckland and through the resources of the Hunterian Museum to which they were introduced, they became acquainted with Owen. For the rest of their lives they maintained a passionate interest in palaeontology and a close friendship with Owen, who was their palaeontological consultant. 50 As with Buckland who had been their first mentor, they not only valued Owen's expertise but were comfortable with the manner in which he reconciled the facts of science with the essential truths of their loose theology. Though they had become experts in the areas of palaeontology in which they tended to specialize, they continued to seek Owen's advice and to support him where their opinions counted. It was Egerton, for instance, who, along with Buckland, persuaded the British Association to commission Owen's report on the British fossil reptiles which made his reputation as a palaeontologist. Egerton was ebullient as the following letter written just after the report was completed indicates:

Merry Xmas to you. You will set me down as a Goth for not having written to acknowledge the arrival of the box dispatched by you sometime since, and to thank you for naming the Chelonians. I hope you have found the Purbeck specimen interesting as you have returned it. The Chalk Saurian arrived quite safe, and I am anxious to know what has been done about figuring the same. Has Scharf completed the drawing? If so has it passed the Council? Or shall I stand the expense? I quite forget what we settled about that, and the Paddle. If it is not too late I should like to submit the former to the draftsman again, as I have a day's scalpel work of it and I think I would scarcely know it again. It is now a perfect gem, and the pelvic region appears to be very distinct from the Guana. I think you did not name it. It is not quite worthy of being christened. I will bring it up at the meeting of Parliament. Have you accepted the task of a report on the Mammalian Fossils? However now the labour is over you must I am sure look back upon your work with satisfaction, and forward to the rich harvest which is opening to your view. I hope Mantell will not commit either murder or suicide. I long to see you again and hear of your progress at the British Museum. I am very busy arranging the fish brought home by L.[ord] E.[enniskillen]...<sup>51</sup>

Of the same sort, but with a shorter interest span, Barbara Hastings (1810–1858) was much more passionate. To read her long series of letters over a decade is to sense something of the love affair between collectors and their collections, something of the passion with which they gradually extracted the fragments from their solid cyst and put them together, and of a bit of love for the "master" to whom the prize was presented for his approval and placement in the universal system. Barbara, the Marchioness of Hastings, was a wealthy collector who amassed a large collection, a good part of which

was purchased from dealers or traded from other collectors.

From her second marriage in 1845 and her move across the Solent from the Isle of Wight to Efford House near the fossil-rich and well-known Hordle Cliff, she seems to have concentrated her efforts upon the fossils from the cliff's eroding upper Eocene beds. While she probably did very little of the actual collecting, she spent a great deal of time extracting the fossils from their matrix and putting them together (Edwards 1970). In all, her collection was a fine one which she eventually sold to the British Museum in 1855, three years before her death. By all accounts, Barbara Hastings was a very accomplished woman in society and in the limited area of science in which she was involved. Edward Forbes, 52 Buckland and Lyell were among those who came to her estate at Efford House, to enjoy her hospitality and her collection. Although she had seen Owen several times and, in fact, collaborated with him on papers they each were to give at the British Association (Hastings 1848, Owen 1848), she tried often to get him to visit but with only limited success. When he did get to Efford House, he was as much impressed by the Marchioness as he was with the fossils she had to show.<sup>53</sup> Her notes to Owen, undated, are sparks thrown off to ignite a fire of interest. "When can you come down to see my bones and my roses," she wrote probably before his 1847 visit. 54 But in another year, probably the next year when she was hoping for a repeat of the 1847 appearance at the British Association, she wrote: "I am sadly disappointed that you cannot see my wonders – I have some bird bones . . . from the Crocodile bed . . . [yours] is an old promise, & I hope your promises are not like bird bones - and easily crumbled to dust". 55 And to lure him down, "I suspect you don't know what treasures I have got from the I[sle] of W[ight] & from Hordle, or you would not quite relinquish pay'g us a visit – Can't you come any time this summer you know it was an old engagement". <sup>56</sup> And when he finally could come, probably in 1849 to be called back suddenly by the death of William Clift, "So be it . . . Friday the 20th will be a bright day in my calendar & I hope the Gods, i.e. the Sun, & the Winds, will smile on the Professor, the roses, & tho' last not least, the bones". 57 While much of her collecting at Hordle Cliff was done by a paid collector and, on occasion, by the women and children of the area, for herself, the search was exciting. "I am enchanted", she wrote after being out in the field, "at my good fortune – you know I have had these remains floating ab't in my head since 39 when you named that *Phalanx*<sup>58</sup> found by me in the same spot & figured in vr mammalia I have never been

able to return there till now – I brought home after a most arduous miry walk the other day two more Iguanodon teeth . . ."<sup>59</sup> Sending a turtle specimen by servant instead of rail, lest it be damaged along with a number of different types, late in her pregnancy, she asks that he "call one Barbara. I shall be charmed & just now I move about very Tortoise-like". 60 Pregnant or not, she did not stop working. With the birth of her child two months off, she wished that Owen, "could come and see with your own eyes and judge with your own unique knowledge and understanding", but since a visit was impossible she would send some bones which were difficult to mend. Boasting a bit, she noted that, "I will back my mending and cement against any other". 61 And on another occasion she wrote that she had a perfect underiaw of a crocodilian: "It was all to pieces but I have with oh! such trouble put it together".62 Finally, it seems, some domestic tragedy caused her to forget her fossils: seeing and talking to Owen "roused her energies" and for the first time in half a year she goes through her fossils during which time, "I have never had the heart or inclination to look at a fossil". By 1851, despite Owen's encouragement, her collecting days were about over. She began to dicker with the British Museum for the purchase of her collection which was on display at the Geological Survey; it finally went to the Museum for £300 fulfilling an earlier promise to Owen that her collection would become public property after or before her death. All in all I find these 64 letters covering less than a decade to be an interesting and unusual glimpse into the mind and some of the world of the collector; her letters overflow with her own excitement, an occasional sense of the competition with other collectors and the dependent relationship on the professional as authority. Also they display, like those, for instance, of Egerton and Enniskillen as well, the real collector as something other than an accumulator. Although others may have dug the specimen from the enclosing matrix, it was the collector who did the final and crucial work of cleaning and patching the fragments. A book collector once told me that a true bibliophile was one who read his books; similarly a true fossilist was one who worked his fossils.

Owen's enthusiasm matched that of his correspondents. To Charles Moore (1815–1881) who, as a self-made geologist, had found, in 1864, the teeth of one of the earliest of Britain's mammals, Owen describes the care he will give them in preparing for a forthcoming monograph on fossil mammals (Owen 1871). Thanks, he writes, for "kindly confiding to me your precious little evidence of the *oldest* Mammal I know of . . . Depend upon the utmost care being taken of your dental diamonds. They shall have their 'casket' one by one & will be looked after by myself till the drawing is completed . . . I have given up every autumn holiday & invitation for the 'old mammals'."<sup>63</sup>

Collecting often was a kind of contest. Collectors competed with each other for the best specimens, the novelties which could be described in the literature and, better still, to have their names attached to them by Owen himself. There was also the appeal that their collections would have for the professional or even, perhaps, for the British Museum. It was a game which

might last for a few years or for a lifetime. Nevertheless for those engaged, it was a serious game. Sometimes Owen himself was the cause of local conflict, for local pride was also involved in local discoveries. So Thomas Craggs, who had sent some specimens for description, explained that:

I have just been informed by Mr. Barkas, the bookseller, that he has written to you respecting your paper on the coal-measure fishlets, and I think it due to you, as well as myself, that I should put you in possession of all of that has been attempted on the subject. Mr. Barkas has stated that some of the remains have been described already. This is altogether a mistake on the part of Mr. Barkas. All that has been done you will find in the "transactions" I forward by this post; and you will see that so far from any attempt to describe something new, there is only a lame attempt to identify teeth described previously by yourself and Ag[assiz].

It is four years since this paper was written, and nothing has been done by Atthing and Kirkby. I may mention as a key to Mr. Barkas' letter, that he and others of the Tyneside naturalists, have all along *censured me* for sending the fish remains to you. They had the hope that some local comparative anatomist would eventually have the honour of describing them. In this I have never concurred; and whenever I have found a new

variety, I have persistently forwarded it to you.

If you should have occasion to write to Mr. Barkas I should like you to ask where the descriptions he refers to are to be found. But he has already acknowledged to me that it is only hearsay.

I have over and over again urged Atthing to submit his collection to you, but he would never listen to me. As, however, I have sectioned twice as many teeth as he has done I consider it probable that everything in his cabinet is already described in your paper.

Really, Sir, I cannot help feeling humiliated in having to write in this strain – but the mean attempt of Mr. Barkas – who himself is a mere smatterer in everything – has impelled me to it. $^{64}$ 

A week later he was no more relenting in his description of the local fracas and Owen's role:

... I have taken some pains to ascertain if any naming or description of new coal fishlets exists, and I have failed to find any. The field, I think, is to a great extent a new one, and the unmerited kindness I have received at your hands will stimulate me to further work.

Mr. Atthing and I were friendly until I sought information from you; but since that time he has never allowed me to see his cabinet. There are members of the "Tyneside", too, who have done what they could to widen the breach between us.

The effect of your paper will be to cause Mr. Atthing to submit his collection to someone who will be likely to make a proper use of it, and I shall take steps to induce him to send it to you. It may be that it contains something you have not described; but I

think it extremely probable that I have as great a variety as he has.

This "proving and finding", as we say down here, is unpleasant to me, but I am afraid it cannot be otherwise than sickening to yourself. I trust however that you will not be further troubled on this subject, at all events you shall not be troubled again by me. When you hear from me again, I hope it will be about something at once profitable and interesting . .  $^{65}$ 

Owen, indeed, was himself a collector but on an entirely different level and with different goals and credentials. Like the collectors who sought some form of recognition from *his* interest in their collections, Owen built much of his reputation upon the grander collection which he assembled with their aid at the Hunterian and British Museums. He searched, like them, for specimens

to fill niches in his "cabinets". They were, however, niches which he had invented. His enthusiasm, however, was no less than theirs. Nor did it lack a similar element of a search for and a need of recognition which his analysis and publication provided. To a collector in Australia, to whom he was sending a catalogue of previous specimens received, he wrote: "I know of no class of Natural objects likely to prove more interesting than such fossils, and I hope that every specimen which accident or research may bring to light will be preserved, and I hope duplicates at least may be transmitted here. Recent brains of Marsupials and Monotremes, and impregnated uteri of Echidnae or Ornithorhynchi are still greatly desired by me."

Relations between Owen and his collector-suppliers were not always easy. In the confusion of his "laboratory", specimens were misplaced; and their owners were not forgiving at the loss. Nor were they pleased when on one occasion or another they felt that a discovery was not considered properly important nor the discoverer awarded the credit he felt was his due. To one

such complainant, he wrote:

"Have patience with me and I will pay thee all." My little story of British Cetacea, imperfect, as, from my own imperfectness and the small space my Bookseller has allotted me, if needs must be, is not yet complete; nor has the whole been forgotten. All authorities will be duly cited in what seems to me will be the most convenient place.

Not any of the specimens of *Cervus* from the Elephant Bed can be (by my present experience) decidedly referred to *Megaceros* & I have not space to cite doubtful

specimens.

I am much obliged by the correction of misspelling of Cockmere, as, indeed, the indication of any fault or omission is the greatest favour & most friendly act in relation to my publications.<sup>67</sup>

In general, however, although the collectors might contest with one another over priority of discovery or the right to certain productive desposits, there was a spirit of unselfish contribution in their relations with Owen who,

for scientific purposes, was the final arbiter.

Like the collectors, however, Owen would find himself in controversy with colleagues who were competing with him for the rare specimen or for the priority of its publication upon which scientific reputation rested. His conflicts with Gideon Mantell in the years before Mantell's death in 1852 over the Iguanodon were something of a scandal which injured both men and embarrassed his colleagues. The rights and wrongs of these arguments over what were essentially property rights are often difficult to unravel and sometimes difficult to understand; but they were real – and in the context of the culture of the science of the period they were important. But they were essentially of the same sort as that between Mr. Craggs and his friends in Northumberland. During the 1830s, Owen and an older comparative anatomist at the University of London, Robert Grant were, according to Adrian Desmond (1985), of competing politico-scientific ideologies which fed a continuing personal conflict between the two men who had been friends. How serious the conflict was is questionable; but certainly they

competed for the limited research opportunities then available. To E.C. Hobson, who had, before publishing it (Hobson 1842), sent him useful information for his work on the platypus (Gruber 1991), he wrote to clarify a minor incident:

I have received [sic] three boxes containing *one* a skeleton of Thylacine, another, an Emys & a Carapace of the same, the *third* a College box with jars: the contents of the two first corresponding with the specimens which you were kind enough to say you should send me in a letter I received from you in April 1840.

A *Bill of Lading*, authorizing me to receive the three cases was transmitted to me, without a letter, but by virtue of this, the three cases which arrived by the 'Marianne' (not by the 'Crusader', as your letter indicted), were transmitted to the College and were

presented by me in your name to the College.

Dr. Grant has since claimed the box containing the *Emys* etc upon information given him by the mate of the Marianne that it once bore his address; and the Dr. has further asserted that it was sent to me, by you, in trust for Dr. Grant: and that I have betrayed the trust & so forth. Will you at your earliest convenience (as Dr. Grant refuses to let me see your letter to him (if he has one) which authorizes him to make this statement) write to me to say whether you ever intended to send that box to Dr. Grant, or to me in trust for him: & with many thanks for your valuable information, which you will receive in print (on the blood of *Ornithorhynchus*) by the next despatch from me, and with Mrs. Owen's kindest regards, and those of all our circle.

(The box in question bore my name in ink Owen but no address to Dr. Grant. It has

been sent to him, however, by my desire.)68

Generally anonymous, except for an occasional acknowledgement in a professional publication or an occasional article of their own in the transaction of some provincial society or preserved by title in the Royal Society's comprehensive Catalogue of Scientific Papers, these collectors were major contributors to the content and growth of natural science. Many of them clerics holding a living of sorts in some small country parish, perhaps thinking to emulate Shelborne's Gilbert White, surely felt that they were performing a religious service as had Linnaeus and as did Owen, in helping to realize the creating intelligence of their God; others, more secular perhaps, saw themselves as contributing to a natural science the importance of which the Owens, the Bucklands and even the Darwins were making popular and useful; others were involved for the sheer excitement of the search and perhaps for the recognition which comes with its success. Whatever the reason, however, it was they with their contributions who provided the basic data upon which the "professionals" could build their systems which they knew would move them all to a greater understanding of what Nature was all about

## Professionalism

However we define the "professional", there was a small group of those who by virtue of their positions, possessed formal responsibilities in the pursuit of the natural sciences. They were professors in the universities, holding

chairs in one of the natural sciences and curators of museums of natural history. 69 Although payment for services was not necessary to the definition of the professional, these were paid, rather than honorary, positions. In such cases professional status was thus easily defined. However, such positions were few. Despite the fact that most of them were poorly paid, the competition for them was strong since they provided the rare opportunity to pursue natural science as a full-time occupation. Owen occupied, first at the Hunterian Museum and then at the British Museum, positions which were relatively comfortable and the future secure. His reputation as a leader in the structure of natural science and in its research, made him the recipient of requests from friends and acquaintances for recommendations for appointment to the rare opening or, failing that, any kind of support in the pursuit of their own science and the alleviation of what they felt – and what was – intellectual isolation in the often stagnating provinces or beyond where their research was neither supported nor encouraged. From Dublin in 1839, Robert Ball (1802–1857), who seems to have spent his life in a frustrating attempt to encourage an interest in science there, wrote of a new project in which he asked for Owen's support:

Our Zoological Society here has been always fighting against difficulties, but from the combined effects of wet weather and the somewhat treacherous conduct of our late Superintendent, it was just now in articulo mortis, and as often in such cases I think we are about to rise with a renewed constitution, and will do the State more service than we have yet done – in the first place we have reduced our expenditure one half, and we have taken up scientific business in right earnest, we propose having evening meetings much after the plan you pursue in London with the difference that we are to make them more of a school of Zoology for we purpose (without any affectation of novelty) at each meeting a demonstration shall be given of some order family or genus of animals in fact something like reading a chapter of a book and illustrating the same with specimens &c, thus, while we endeavour to make additions to science, we spread abroad that already known. I have got pledges of aid from our best men here, and amongst these Sir P Crampton, 70 Surgeon General, who has requested me to petition you for the head of a Kangaroo preserved in spirit, this he requires to illustrate some speculations of his own, that he purposes bringing forward at our meeting, he also is very anxious to ascertain the exact dimensions of the Pelvis of a Wombat and would esteem a sketch thereof a considerable favour, as you may be able to furnish him with what he requires I feel the object justifies me in forwarding his petition, for myself I solicit some little contribution from you for our evening entertainment even if it only be a letter suggesting or asking for Zoological information, my object is not so much ad capitandum vulgus as that the notice of distinguished persons, like yourself, may be used as an exciting agent to develop the latest talents amongst us, if any, and so encourage its flame as to lead ultimately to the advancement of Science.71

Such requests illustrate how difficult the conditions were in most cases, and how difficult it was to pursue science at a full-time professional level. This was particularly true in most, if not all, of the provincial towns where intellectual isolation was as much a problem as the financial. William Benjamin Carpenter (1813–1885), one of the founders of modern biology based on physiology and, later, a marine biologist of note, felt estranged

when beginning his teaching career in Bristol. After applying for a professor-ship in Edinburgh, which he failed to receive, he wrote to Owen in some despair: "Living, as I do, so completely out of the way of knowing what is being done in science, except through ordinary journals. I am always uncertain if I am really working to any advantage, or if I am merely repeating what has already been done, and is generally known".<sup>72</sup> Determined to come to London to devote himself fully to science, he managed a couple of years later to receive an appointment at the University of London where he remained until 1879.

George Allman (1812–1898), occupying the botany chair at Dublin's Trinity College asked the favour of a testimonal on 7 January 1849:

At the time of my election to the professorship of botany here, the salary attached to the botanical chair was diminished by one half in order to afford funds for the curatorship of the herbarium, an office then for the first time established and which the College wished to place in other hands than those of their Professor. The salary now given to the Professor of Botany is only £100, the fees paid by the class amount to about £90 and as this is manifestly not sufficient to enable a man to devote his life to pursuits yielding no other source of income, I have determined to make application to the College Board for an increase in salary. I think I have a strong case in my favour, and what I want you kindly to do for me is this: to let me have a testimonial stating your belief as to the merits of my natural history investigations, in order that I may go before the board armed with the opinion of eminent men on this point, so as to place it out of the power of that body to say that I have done nothing meriting an increase of salary, which in all probability would be paid by men incapable of judging of the character of the kind of researches in which I have been engaged.  $^{73}$ 

In the event, the testimonial did help since Allman reported a few months later that his request for an increase in salary was "partially successful". 74

Dublin was not particularly supportive of the natural sciences. Ball, so enthusiastic in his efforts to create a climate favourable to the pursuit of science years earlier, was continually frustrated by both public and official indifference. "Chained to the desk in occupation distasteful to him. Disappointed of advancement or change of employment," like so many others he was unable to practise science on a full-time basis. In 1853, a few years before his death, he wrote to Owen of his personal troubles:

... I have been recently discharged from Her Majesty's service my office with that of 16 others having been abolished. I am glad of it on the one hand on the other loss of present income and future prospects are a sad affair after more than 25 years service a few years since other holders of abolished offices retained their pay for life not so now we have even got less than the law allows the Treasury to grant! in my case £13 a year is deducted from my absence on leave or sickness during my service, altho it was considered within the period the Treasury allowed. I am not worse off than others but in *my case* an *apology* was made for putting me out to the effect that I was addicted to scientific pursuits! and that it was contrary to the rules of the service that officers should occupy their thoughts in pursuits likely to obstruct their attention from their duties! & a peremptory rule laid down for future. Nothing against cards or company Billiards or Brothels. The real truth is that if the reduction of numbers was right it was right that I should go – the excuse was probably partly meant as a sort of compliment and partly proceeded from the jealousy of that low official spirit which looks upon a person who deals in higher pursuits than

clerkship with an evil eye. I have had my full share of this wretched tyranny and never so much as at the end of my labours – instead of rising on my liberation from slavery I was just broken down & absolutely feel exhausted; about two months I continued in vertigo from which I am only now escaping slowly; should I recover however I hope to do good service yet as I can now nearly command my own time – no use regretting the 300,000 hours I have spent in unmitigated slavery – I am busy promoting practical zoology in T.L.D. [Trinity College Dublin] & hope soon to make it popular there.<sup>76</sup>

The situation was hardly better in London where, while there were more opportunities for a paid position in science or a science-related activity, the competition was greater. For those without independent incomes, as was the case with so many of the "new men" during the last half of the century, the need for paid positions was very great. James Murie, who was prosector for the Zoology Society, outlined the "politics" and the need for paid employment in a letter asking Owen's help to secure the professorship at University College, not yet formally on the market, after the death of Robert Grant who had occupied the chair for more than forty years:

May I ask of you to use your influence in recommending me for the now vacant (although not officially declared so) Chair at University College.

Poor Prof. Grant you will have seen by the papers is now no more, and this horrible

job of looking for dead men's shoes falls by absolute necessity on me.

I do not know with whom the appointment rests but I fancy that Sir William Jenner's influence would be great. As regards Prof. Sharpey I have just dropped a note to Dr. Allan Thomson who is in town desiring him to speak to his old friend Sharpey on my behalf. Still a note from you to him (Sharpey) might be additionally useful.

Marshall, Burdon Sanderson, Bastian and Morris I all personally know, but whether

they have a say in the matter is what I have yet to learn.

I imagine Jenner (or Sir W. Thomson?) is the man through whom by a hint from Royal

patrons could get the thing settled to my advantage.

I so feel like a drowning man grasping a straw. If I am to do the work I have chalked out for myself and follow up your paleontological researches, now or never is the time. Vigour and earnestness will assuredly flag if I have for aye the sword of Damocles (starvation) hanging over my head.

Of course for the present all must be gone about privately as no official intimation of a vacancy could be with propriety be issued. Nevertheless there is a necessary urgency in

my taking early steps among friends.<sup>77</sup>

For every opening, there were many aspirants. But each required the testimonial of those with influence through either political power or scientific reputation. With a bit of the former at his command and a great deal of the latter, Owen was the recipient of a continuing flow of requests for aid. In fact, although when he desired to make a move, his scientific reputation was such that the solicitation of testimonials would have been a denial of the hierarchical position he held in the establishment since it was that very position validated by his works which testified to his worth. His flirting with those at the University of Edinburgh who were suddenly forced to find someone to fill the vacancy in natural history caused by the sudden death of Edward Forbes (Born 1815) in November 1854 illustrates something of the subtleties of academic politics at a high level.

The Chair in Natural History at Edinburgh was a prized position for a professional naturalist both because of the reputation of the University and the remunerative possibilities it offered. Edward Forbes succeeded to the Chair in 1854 after the death of Robert Jameson (1774–1854) who had occupied it for half a century – and with distinction during the earlier years of his tenure. Forbes, however, at 39 and perhaps the most promising naturalist of his generation, died within a few months of his appointment, overworked he felt, by the requirement to teach a summer course imposed by Edinburgh's Town Council which exercised political control over the structure of the University and its curriculum.

Although he never admitted it, Owen, eager to leave the Royal College of Surgeons where he felt frustrated by the Control of an unsympathetic Council became a serious candidate for the position.<sup>78</sup> Immediately after Forbes' death on November 19, 1854, Owen, alerted by a request for a testimonial from James Nichol (1810–1879) to the vacancy and the search in process for a successor, sent confidential feelers to associates at the University inquiring about the conditions of the position.<sup>79</sup> Owen's letter of recommendation for Nichol was carefully positive but non-committal; it said nothing that would make Nichol a serious competitor should he decide to seek the position. George Allman, still trying to leave inhospitable Dublin, also made himself a candidate and, unaware that Owen was in negotiations for the position, wrote him too for a recommendation for his candidacy.<sup>80</sup>

The brief negotiations between Owen and Professors Alison, Balfour and Christison who formed something of an informal search committee were relatively brief with Owen particularly, allowing himself some manoeuvring room, while the others pushed him for a positive decision. For them and for the University, it would have been something of a coup to have enticed Owen to leave London for its northern competitor. On 28 November, Professor Christison replied to Owen's feeler with a summary of the conditions of the Professorship:

The duties of the Professor of Natural History have hitherto been as follows.

- 1. To deliver a course of lectures five days a week from the beginning of November 'til about the 20th of April.
- 2. To deliver a summer course of three months, five days a week, in May, June and July.
- 3. To examine candidates for the medical degree in his branch at occasional periods between the end of April and the end of July.
- 4. To take entire charge of the Natural History Museum as "Regius Keeper." But this conjunction of offices is not essential, though undoubtedly very desirable.

There is no University statute which requires the double course of lectures – in summer as well as in winter. But there is at least 50 years' practice in its favour, and also the Professor's evident pecuniary interest.

The emoluments are £100 of Crown salary and a £45 from the Town Council as "Thomsonian Lecturer on Mineralogy" – an office however which may be ditched if the Council choose – and the students fees, four guineas from each, whether for the winter or for the summer course. I should think that Jameson in his best days made £1000 a year of his Professorship. I have no doubt that poor Forbes would have made this sum likewise. He had 140 students last summer, though there could be no sufficient announcement of

the fact, that he was to teach; and he had entered 75 during the first four days of this winter session, which indicated at least 150 for the ultimate class. A good many of these would be perpetual men; for it is the fashion to make a new professor's first batch of students all perpetual. After that, one fee of four guineas, and a second of three, make them perpetual.

Considering the popularity of the subject and the requirement of Natural History for a Medical Degree, a professor of good qualifications ought, I think, to make £1000 a year, certainly £800, including the salaries and also from £50 to £70 of Graduation Fees, which I forgot above. Some estimate the value of the chair even higher; and a decidely popular professor might raise the total emoluments of office to £1200. But that amount ought by

no means to be calculated upon ... 81

On the same day, Alison wrote a long letter, in which he addressed the question of the requirement for the summer term. He was more forthright than Christison. While the academic council would not make a summer course obligatory, still, he added, "I am sorry to be obligated to add, that all our regulations are, by the decision of the Courts of Law, put under the authority of the Town Council, so I am afraid that there can be no doubt that if they please, they can compel a Professor to give a Summer as well as Winter course; & in fact it was in obedience to their authority, not by his own, that poor Forbes gave a course last Summer. You may probably have heard that he expressed himself strongly to the effect that they had grievously injured him in this way." Addressing what was probably another of Owen's concerns, he recognized that, "in the present state of Science it is impossible to suppose that the whole subject of Natural History can be satisfactorily taught by one Professor". It was the intention, therefore, to petition the Council for the creation of two separate Chairs with one professor for Geology and Mineralogy and another for Comparative Anatomy and Zoology. "However", he concluded, "what may be done as to this proposal is still quite uncertain; & there will be no immediate decision as to the permanent state of the Chair . . . but I have been anxious to put you in possession of the exact state of the subject so far as I know it & shall be happy to give you any further information in my power – as I am sure that your aid in supplying our present deficiency would be of real importance."82 Thus the negotiating positions were laid out: the obligation to teach a summer course, the division of the professorship and, underlying both, the power of an external lay authority over what was to be taught and how it was to be taught. Nevertheless, Owen apparently decided to pursue the possibility of the professional move.

The next day, Christison, excited about the possibility of Owen's coming to

Edinburgh, wrote again enclosing a letter to the Duke of Argyll:

... Should you still entertain the question [in view of the conditions described], will you forward it [the Argyll letter], if you approve of this when I tell you, that its object is to stay proceedings in another direction, by simply mentioning that "I have it on undoubted authority that it is not impossible the chair may be the object of your ambition," and by showing the Duke why you should be nominated, if you desire it. I think this step necessary to prevent either His Grace or other members of the Gov't concerned in the matter from committing themselves towards another; and I feel pretty

confident that my letter will secure this object. I would have sent my letter direct; but, under your request to regard your letter as confidential, I do not consider myself entitled to act without your consent.

If you have made up your mind to accept the office, I would advise you to communicate at once with the Duke half a day after forwarding my letter; and, if you are not personally acquainted with him, you may say you do so, at my recommendation, to save time. In the same event, let me know your resolution as soon as you can; and I shall stop much nonsense and folly going on here; and obtain a recommendation to the Crown from our worshipful Town-Council, unless they are greater fools than even I take them to be. §33

### Separately, Balfour wrote urging Owen to consider coming to Edinburgh:

The sad & unexpected death of Edward Forbes has thrown a gloom over us in this quarter & has given a terrible check to our efforts to advance Natural History. We are looking for a successor & we naturally turn to you. At the same time we feel that your position in London is such that you may not be disposed to come to our northern metropolis. If there is any chance of your accepting the offer I am sure that the Professors would petition government to confer the appointment on you.

The Natural History class here is a very good one as regards numbers. Forbes said that this year his income would be £1000, & I have no doubt that it would have been much more in future years. Besides medical students there are a number of amateurs. There is every prospect of the school rising as regards Natural Science, more especially after the Museum of Economic Geology is established.

A Zoological course is what is particularly wanted for our medical students.

It is perhaps presumptuous in me to write to you on the subject but I have no doubt you will excuse me. I feel a deep interest in the Nat. Hist. cause & I am very anxious that the chair should be in the hands of one who will give us an influence in the right direction <sup>84</sup>

Even before receiving Balfour's letter, Owen had expressed his interest by communicating with the Duke of Argyll<sup>85</sup> and replying promptly to Christison. To the Duke of Argyll's letter asking whether he wanted the Chair, Owen replied on 8 December:

To the Professors of the University of Edinburgh who have done me the honour to desire to know my views respecting the vacant Chair of Natural History, I had uniformly replied that I could not accept with its present obligatory duties of a Summer Course in addition to a Winter course of lectures. In answer to a second letter, which, under the circumstances and which your Grace has kindly addressed me, I believe it to be not a breach of confidence to inclose, I have replied that the compulsory Summer course forms the sole objection.

The works in which I now am & am likely to be for some years engaged, necessitate a residence in London for at least five summer months. I am by no means sure that after fulfilling the duties of the Winter-course, five lectures a week for six months, my strength any more than my poor friend Forbes', would carry me through a continuous course during the succeeding summer months. I cannot, therefore, accept the obligation.

In the event of the Town Council consenting to allow the Summer Course to be a voluntary undertaking on the part of the Professor of Natural History, I would accept the chair, if offered.

There can be no doubt that, with the present vastly increased importance & applications of Comp. Anatomy & decreased importance of Mineralogy, the Association of subjects suggested in Dr. Alison's letter would best accord with the needs of the present race of students. <sup>86</sup>

To both, Owen had expressed a serious interest, especially if the Chair would be divided as seemed highly probable and if the summer course were not obligatory. With respect to the latter, he made his position clear in his response to Balfour's personal appeal:

In your feelings through the loss of dear Edward Forbes, all here, with myself who knew him, fully enter and participate: it is in many respects an irreparable one. Apart from my regard for his interest, the same reasons that forbad my thinking of the Office, on poor Jameson's demise, forbid me on the present most unexpected and lamented occasion. Five lectures a week for nine months in the year, according to my habits of preparing and delivering a lecture, are more than I could answer for strength for.

Six months of such work I would have grappled with, had the additional three months not been compulsory, and compulsory by an authority, perhaps not the best judge of the wear and tear, or of the real use as a teaching element, of such work. Emolument is not an object with me; but a five-month, or, at least, four months' residence in London, are essential to the prosecution of work, which are the main conditions of my life.

To have promoted the spread of my favourite Science, by enlisting the sympathies of a wider circle of students than I can ever have here, would have been a pleasure, & indeed felt as a duty, to be accepted by me, if the conditions had been such as I could have answered for myself to fulfill & compatible with a four months' residence in London, in relation to a more direct means of advancing Zoological Science.

No work would give me more pleasure than that of impressing my views of the Laws, Structure, relations and uses of the Animal Kingdom, Zoologically & Geologically, on young minds, at my own old Alma Mater, had that work been limited to a Winter Session of six months.<sup>87</sup>

In the end officialdom won out. While it seemed highly likely that the chair could be split as Owen desired, it was impossible to persuade the Town Council, who were not "the best judge of wear and tear" and were indeed "greater fools" then even Christison had thought them, to eliminate the requirement for a summer course. As a consequence, Owen, like Huxley, who was also toying with the possibility of moving to Edinburgh, decided not to be a candidate. Whether Owen was really willing to move from London to Edinburgh or any other place is questionable. Certainly he wanted to be out from under the authorities at the Royal College of Surgeons. However, he had made his reputation there and it continued to be an important research base. The Edinburgh possibility, like rumours that he might go to the United States, was a move in a political game whose successful end was the creation for him by his political friends of a position in the British Museum two years later.

Critical to the few positions available which not only conferred some degree of financial security but professional status as well, was than, as now, the published record of research upon which the regard of the scientific community rested. The significance of such research was the coin which the researcher used to purchase position. Within such a system, as in any creative system, priority was important. Owen owed his position in the community of science, as did his colleagues who operated on the same high plane, to a long series of anatomical, zoological and palaeontological

discoveries – some minor and many major – which bore his mark. And like any property owner, he acted to protect his property against poachers. He was quick to demand credit for his discoveries and to call to book those who claimed one or another as his own. Apparently sensitive to Owen's concerns about credit, Martin Barry (1802–1855), whose work Owen supported against his critics, wrote that, "I am vexed on recollecting that in my lecture to-day I omitted to mention one remarkable except'n to the opinions regarding the Germin'l Vesicle – viz. the view of Prof'r Owen that the Germin'l Vesicle is the *centre from which devel't radiates*. This omission I shall have an opportunity of making up for to-morrow when it will be shown how

remarkably the word "radiate" described the process."88

Although Owen was very sensitive to possible infringements on his own rights of priority, he was not always so careful with those of others. Whether the product of a busy professional life or, as some of his colleagues charged, a conscious decision not to give credit where credit was due, he was charged with ignoring the work of others, or, what was much more serious, of outright plagiarism. At the lesser end of the scale was his occasional omission of appropriate credit for work which others had done. Thomas Blizard Curling (1811–1888), a well-known London surgeon complained that Owen had not rectified in print his omission of crediting Curling's observation of the entozoon Dactulius aculeatus since he is anxious, "that the correctness of my description should receive the sanction of your great authority, and to remove an impression which the absence of any notice of it must . . . have left that you had not felt justified in assigning it a place in the Class to which I have assigned it". Three years later he was still trying to persuade Owen of the correctness of his observations.<sup>89</sup> The case recalls that of Owen's publication a decade earlier of his description of another entozoon, Trichina spiralis, [later renamed Trichinella spiralis] (Owen 1835) as if it were his own against the putative claims of James Paget, then a student at St. Bart's. 90 Although Paget, who remained a friend of Owen's until his death, never made the charge, Owen's opponents accepted it as fact. The case illustrates the fine line between the act of discovery – Paget, while probably not the first one to notice the cysts within which the parasite was enclosed, was the first to discover them since he recognized the phenomenon and suggested its possible clinical effect – and that of description with its anatomical analysis, classification within the broader system of the organic world and the formal recognition of its place in Nature by naming it. In the natural sciences, discoverers occupied a lower level in the hierarchy of which the "professional" was at the top. The difference is again that between Cannon's "scientific observer" and his "undisciplined observer". The difference was and is important. The former, whatever their background, became the professionals, while the latter, no matter how important their particular observations, were the "amateurs". Generally the distinction was recognised; and it regulated the relations and attitudes among the increasing numbers of working naturalists. What is interesting in the Paget-Owen case is how

clearly Paget recognized the political ramifications of the distinction and, cognizant of those implications for his own professional future – he was only a student, barely 21-years old at the time – tempered his response to what others considered unfair treatment. Writing to his brother, the day after Owen read his paper to the Zoological Society describing and naming *Trichina* with only bare credit to the "discoverer", he indicated his awareness of the situation's politics, an awareness which along with his real talent was to make him one of the most important and influential medical practitioners and educators of the century. "One discovery", he wrote, [is] "not enough – there must I fear be a frequent repetition of such things, so as to keep constantly before the public before they will give you even fair play. This slight occurrence has given me more insight into the ways of the world in this respect than I would ever have learned by hearsay – but I congratulate myself in having been at least even with them at all." 91

Not all conflicts of priority or the trespassing on property already claimed were so easily resolved nor the claims so readily adjudicated. Owen found himself party to such conflicts more often, it seems, than his colleagues. Moreover, his behaviour in such matters, even when he was at the peak of his reputation, is difficult to understand. He was quick to take umbrage at what he perceived as an intrusion of his "scientific" space and even, on occasion, at what he perceived as the theft of his intellectual property. His behaviour on such occasions was in sharp contrast to the aid that many of his colleagues, whether professional or amateur, received from him. His conflict with Mantell during the last years of Mantell's life was an embarrassment to those who were friends of both. It cost him the presidency of the Geological Society which his palaeontological work had earned for him. Of lesser consequence was a mutual charge of plagiarism arising out of what may well have been the simultaneous discovery of a stage in the development of the tooth by both Owen and Alexander Nasmyth, a young dental anatomist. 92 In brief, Nasmyth accused Owen publicly of using his influence to prevent the publication of a paper of his read at the British Association meetings of 1839; Owen claimed that the paper delivered was not the one read and, in fact, had been revised to include a new discovery which Owen had subsequently reported. Nasmyth replied that on the contrary, Owen had, in fact, after learning of the discovery during the meetings, hastily prepared a publication in order to establish his priority. And all of this spread through the pages of the Lancet to the great delight of its editor Thomas Wakley who used the case as a club with which to beat again the Royal College of Surgeons. Owen's friends were at a loss either to make a judgment as to the merits of the case or to understand Owen's virulent reaction to any attempt to resolve the difficulty quietly with as much dignity and as little embarrassment as possible.

Thomas Hodgkin (1798–1866), a peaceable Quaker who had chaired the meeting at which Nasmyth had read his paper, was asked by the Association Council to suggest a resolution. With little or no documentation to support

the claims of either party, Hodgkin came to the conclusion that it might reasonably be assumed that both had arrived at the discovery in question at the same time since both were engaged in the microscopical examination of teeth. Hodgkin, who had heard Nasmyth's presentation, while not remembering it in detail, recalled that he was, "fully impressed with some of the facts which it was the object of his paper to describe, & which & by those diagrams, were strikingly presented to the eye. Hence, he concluded, "in my humble opinion, we may safely award to Alexander Nasmyth the merit of original observations, at least as respects himself, & at the same time at which he places them without detracting from Professor Owen's similar merit of originality & accuracy, or obstructing one particle from the rich contributions which he has paid to Science, & which have been so highly & justly appreciated by his contemporaries. It would give me unfeigned pleasure to learn that this view of the case is generally adopted, & that the talented authors as well as the public are satisfied with the decision." 93

Hodgkin was not to enjoy that "unfeigned pleasure" for Owen obstinately and vigorously rejected his conclusions, arguing strongly his original position that Nasmyth had incorporated new material, his material, in his paper after it was read. Weary with the task imposed upon him which, from Owen's point of view, appeared to force him to make choice between two friends, Hodgkin replied testily to what seemed to him an unreasonable and inexplicable position taken by Owen over what seemed a relatively unimportant point. Upset by remarks apparently attributed to him by a third party, he protested the misrepresentation and continued that he:

... more than once most distinctly stated my particular wish that what I said ... might not in any degree be construed to the prejudice of Professor Owen whose friendship I felt it a privilege to possess & would be sorry to lose. In fact I said almost totidem verbis what I expressed in my letter which I sent off in some haste in order that there be no misunderstanding of the part which I took. The documents which the committee of examination appointed at Glasgow have looked into are not those from which any [definite?] conclusion [can be made] & therefore the report is perfectly useless & I conceive if the matter is to be left there the public may take a view unfavourable both to the Association & to Professor Owen. I do not wish to decide who was the first discoverer of the point in question nor do I think that the committee need do so. I regard you both as original & successful inquirers & should the committee think right after seeing A. Nasmyth's original memoirs & drawings to recommend the publication of the suppressed article that he may not be treated worse than other contributors, I should not regard that as any injury to thee but an act of justice to him. I should moreover regard it as the simplest & most agreeable mode of getting rid of a painful subject which I should desire to have buried in oblivion . . .

I sincerely hope that this affair which was brought to me & not of my seeking & in which I only wish to serve as an aid to pacification may in no degree impair our friendship but that thou will still believe me sincerely yours. $^{94}$ 

In the end the whole affair drifted into an inconclusive end, particularly as the *Lancet*, apparently with some glee, reported that both Nasmyth and Owen had been anticipated a few years earlier. Why was Owen so concerned with what was, in effect, a minor affair, which, as Hodgkin suggested, was

almost certainly the result of a simultaneous discovery by two researchers focusing their attention on the same object? The answer, while it may lie somewhere deep in Owen's psyche, reflects the degree to which he was sensitive to the need to advertise and to preserve his discoveries, no matter how small, in the face of what he perceived as the competitors for the scientific position he was then building. How real the competition was, or seemed to be, a note from Buckland reveals. Writing to Owen early in 1839. he probably refers to the initial publication in the series that was to become the *Odontography*, when he hopes that Owen will soon be advertising, "the first fascicules to preoccupy the ground for there are living as well as fossil sharks with prodigiously voracious teeth". 95 The protection of one's "intellectual property" played, as it still plays, a paradoxically important role in the politics of a science whose underlying imperative was the openness of research and the sharing of its results. Its importance as a political factor in a fiercely competitive system for a limited number of rewards goes a long way to explain Owen's relations with his colleagues as it does the more general behaviour within the scientific community.

# The question of religion

Sometimes overlapping the large number of collectors, who corresponded for over fifty years, is a second group of equal importance in Owen's public life. There were those for whom the discoveries of the new science affected, often as a threat, their firmly held faith in the truths of their Christian tradition. For that faith, the almost daily discoveries of geology and palaeontology raised serious problems which, it seemed, only a rethinking of traditional beliefs could resolve. In Owen's generation, those who wished to accept the discoveries of science and yet to hold on to their faith in the word of God as revealed in the biblical sources looked to him for some guidance in the resolution of what seemed so contradictory. It was easy enough to resolve the problem as, for example, both Phillip Gosse and Huxley did in their separate ways by making a clear-cut distinction between religion and science as areas of explanation. But for the cleric in his country church or for the believer who saw a contradiction every time he collected a fossil of some long extinct reptile from the Cretaceous it was much more difficult to resolve the contradictions between what he saw and what he read daily in the Mosaic account of creation. From the rectory at Enniskillen's Florence Court, Josiah Crampton, who generally supported Owen's position, but was perplexed by what seemed to him his recently published skepticism with respect to the biblical accounts of longevity (Owen 1872), wrote to suggest that Owen had not considered all the evidence in support of the antediluvian patriarchs of the Moasic account with their very long life spans. As a minister who respected Owen's wisdom he asked for a further clarification of Owen's position and additional comment on the whole question.96



Drawing of Archaeopteryx macrurus by Joseph Dinkel. Published with Owen's monograph in 1863 (1.5).

It was such serious minded collectors and clerics, usually isolated in the small towns and villages of provincial England, puzzled and even threatened by the new reading of both the book of Nature and that of Revelation, who turned to Owen for the means to maintain their faith in both science and Christianity, John G. Burgon, one of his clerical constituency, wrote him toward the end of both their lives urging him to continue the fight to maintain the proper relations between science and religion, relations, however which would subjugate the findings of science to revelation. "From my own point of view," he wrote, "I know what to think about the origin of man. And it is not modesty – but imbecility – which doubt after entire conviction: especially when unproved hypothesis is all that can be adduced on the other side. But it is an unspeakable condition to find Natural Science itself declaiming the over-hasty conclusions of certain of its votaries. The truth seems to be that men want to get rid of the Creator of the universe – & of the eternity of the life to come ... you would confer an invaluable benefit on millions if you would make such an utterance on "Evolution" as should convince mankind that 'Science' is by no means of one mind on the matter concerning which scientists are just now speaking so confidently."97

Owen was not one "to get rid of the Creator" nor unwilling to assume the role assigned him. His entire science derived, in fact, from his firm belief in a divine creator which was the source of all Nature and all Truth. The foundation for that belief lay in the Bible. Throughout his life he held to the position that there was no contradiction between science and the words of Scripture when properly read; that together both demonstrated the existence of a creating God for the betterment of Man. Although it deepened with the passage of time, it was essentially the reconciliating faith of William Buckland which Owen had absorbed during his close intellectual relationship with him during the 1830s. In his earliest years in London, there is no evidence that Owen was anything but a nominal believer. In his early letters there is no mention of church going nor of religious notions of any sort. In a letter to him from his mother back in Lancaster, she urges him to take care against infection from the dissecting room and to, "make a point of washing your face, neck, arms, hands &c every night before you enter your bed", (Dobson 1981, 3) but no mention of attending church or saying prayers. It was only later, after his marriage and after his association with Buckland, that according to Caroline Owen's diary, he and she attended church regularly after which they walked through the Zoological Gardens while he made observations on the inhabitants there, thinking perhaps of the next to die and become a subject of his dissection. That habit of a Sunday is symbolic of an intellectual change in which he considered religion and science inextricably related parts of a single enterprise, the explication of a divinely inspired creation. For him, it was all of Nature that, in the Psalmist's words, "were telling the glory of God", but it was a Nature whose proper understanding was the duty of the natural scientist. To the discharge of that duty, he devoted his life never forgetting its ultimate goal. To his young son, after

describing the "mechanism" of the Echinus which Will had found on the beach at Felixstowe. Owen wrote: "The Echinus has a hundred such arms & we have but a pair. And both we & it are the works of a great Creator who never loses sight of the working of his machines. Let nothing disturb your feeling of reverence for Him when in His house & engaged in His workship." Whether a simple marine invertebrate or Man himself, every organic form gave evidence of the creative intelligence: and it was the explication of that intelligence which was the responsibility of the natural scientist. It was not a new idea – Leibniz used it to justify his cosmology and Linnaeus his grand classificatory system. Owen, however, was applying the new techniques of comparative anatomy, and geology and palaeontology to enrich that understanding, to erase earlier errors, even those of the biblical redactors, which had taken on the character of irascible error through constant repetition. In his sense, science was not the destroyer of the record of revelation but rather its continuing editor. The editorial role which he assigned science, and his science in particular, often did not sit well with ardent scientist or ardent Christian. For an understanding of Owen's science - and it is on his science that his reputation rests - it is necessary to keep in mind his deeply-felt theism and the primacy of place he accorded the initial and ever-present Creator. Today, a hundred years after his death, his views seem hardly revolutionary although, clothed differently, the problem and the attempts to resolve it, are no less relevant.

Owen held firmly to the reality of a single creator through whose efforts all of the perceived world – past and present exist – and maintained with equal force the probability, if not certainty, of an afterlife as the Bible promised. And always, he dressed his views in the garments of an objective science.

Late in life, responding to a letter from C.S. Bagot, a neighbour in East Sheen, which accompanied a gift of Edward Clodd's "little book on Evolution" and which, he wrote, "seems to give a tolerably clear notion of Darwinism", Owen wrote that the book: "gives an able and correct summary of what has been made known of successive operations culminating in civilized human beings". But, he went on, in words like those he wrote to his son half a life earlier, "Every step in this long & great series suggests foresight, intention, and successful attainment" the aim of "whose Cause, Controller and Guider is made known, professedly, in the Bible". 99 It was a belief which he firmly maintained and often expressed both in correspondence and in publication. That theistic belief, integrated with the ancient philosophical concept of a First Cause, makes futile all discussion as to whether Owen was an evolutionist or whether he was not. Although he could ascribe adaptive changes through time as the result of Secondary Causes, the nature of which were still not fully known, his belief in an initial Cause and a continuing "Controller and Guider", ignores completely the material basis of organic change which was at the very heart of Darwinian evolution. His suggestion, for instance, that the peculiar structure of the forefinger and central incisors of the Ave-ave were developed, "evolved", if you

will, because of the Creator's concern long ago with the threat to the native trees from which the animal extracted the destructive grubs (Owen 1863), is as clear an example of adaptation as that of Darwin's classical description of interdependent relationship between mistletoe and oak; but the sources of the changes which resulted from this interdependence were at opposite poles of the explanatory spectrum. Owen's assumption of a divinely plotted course of adaptive changes has no basic connection with the materialism which underlies the opportunistic process that is the substance of Darwinism.

Like his belief in a divine Creator whose existence is by some twist of logic provided by the divinely inspired biblical text, his belief in an afterlife, though admittedly indefinite, was sure. Viewing the subject with the supposed detachment of the scientist, conscious of the lack of either observational or experimental evidence, he was still as certain that there was a subsequent life as he was of the existing one to the examination and description of which he had devoted his career. Perhaps nowhere is his faith made more specific than in a letter he was moved to write to an unknown admirer who had asked his views on the afterlife. In a letter of 21 March 1858, only in draft, at the height of his scientific career, he tried to describe the afterworld as he perceived it, not only as a matter of faith but also as one which could be substantiated by some future advance in scientific knowledge:

For your kind expression of sentiments in regard to my Lectures on "invertebrate Animals" I feel grateful, and you show a more flattering deference for my power of reasoning and insight by submitting to me an enquiry into a subject which transcends

the knowledge allotted to us in our finite state of existence.

To so frank a request, I feel, however disposed to reply in the same spirit. I have thought of the subject, and from analogy believe that a future state of existence and consciousness will be the result of an organism, bearing not a greater or more essential distinction from our mortal one than the Apostle expresses by speaking of it as a 'glorified body'. Between the putting off of this mortal coil and the putting on the immortal one, I suspect, from analogy, our state will be as one in a deep sleep or syncopy; that on reawakening we shall be utterly unconscious of intermediate past time (supposing successive time to be anything more than a mode of our poor possible way of thinking here) that our recovery of self-consciousness will make the last act of consciousness on Earth the first that we recall, and that from the death-bed to the judgment seat will seem but as a step of a moment; though 1000ds or 100000ds of years may really have elapsed. If this be so, the groundwork of Purgatory is cut away from trading priestcraft; and the promise of the Saviour to reappear to the generation he left will be essentially fulfilled as to them. Soul, Spirit, Breath, pneuma [in Greek letters] is a figure of speech. This the sum of the mental and intellectual phenomena which result from the organisation the Creator has willed us to exist by. The same creative power can will us to exist in and by such organisation modified as He pleases. Newton, Locke and other gifted thinkers have all believed that it might please God to produce thought as well as magnetism and electricity by a property of imponderable matter, combined with other modes of force. If men were taught that, virtually, to each individual, judgment would follow immediately upon death it is consistent with what we know of Human Nature, which fears a result the less as it seems the more uncertain and remote, to believe the end of true Religion and Morality would be the more surely gained.

The immaterialist expressly or virtually takes from God the power to destroy the abstraction which he calls 'soul.' The theologian embracing that tenet dreams vaguely of

some intermediate Hades where the disembodied soul wanders waiting for the last day; the business-like priest invents a tormenting intermediate Hades and its opposite – a tempting Paradise; and arrogates the power of transferring the hypothetical soul from the one place to the other.

By their fruits shall we know 'doctrines' as well as 'men'! That conclusion which I have formed from analogy and Scripture but which I entertain only with a sense of great probability of error and of being very wide of the mark, has at least the advantage of giving no continence to the grossest abuse of the Christian revelation."<sup>100</sup>

Although he was critical of those who maintained biblical statements which were clearly at variance with the findings of natural science, he was equally critical of those whose opposing arguments misquoted, misinterpreted or exaggerated the scientific record in their zeal to debase that of the Bible. "There are vile natures in this world," he concluded a long reply to a correspondent who wished Owen's views on some particulars in the popular literature of the new criticism. "It is a sad fact, make of it what you will; but as the *Crotalus* has its rattle, and the *Cobra* its painted hood, one to warn the ear, the other the eye, of the unwary, so the fool that sayeth in his heart there is no God, and they that speak it openly, are made at the same time to expose their nature." <sup>101</sup>

Although he was a loyal churchman as he was a devoted scientist, he was equally critical of churchmen who ignored the scientific evidence. He was

sharp-tongued to both.

A dozen years later, in the midst of the furore occasioned by the limited criticisms of traditional theology in the Essays and Reviews of 1860 and the Colenso affair a couple of years later (Cockshut 1959), Owen reacted strongly to the ignorance of science which the critics displayed. While the specific issue in both these cases was the conflict of ecclesiastical authority with that of the state, the issue was raised by a modernist position which in one way or another was sympathetic to an emerging school of biblical criticism which sought from within the Church establishment to review the biblical text from the standpoint of modern scholarship. The particular cases brought into the open the fears of the traditionalist in the face of what seemed to him to be the threat of a secular revisionism particularly from the natural scientists, some of whom had so recently and loudly raised the banner of Darwinian evolution. In the face of that threat, a group of London chemists sent to a large number of scientists, for their assent and signature, a declaration whose major intent was to declare the subordination of the data from science to the biblical record wherever apparent conflict existed. 102 From its opening sentence, "We, the undersigned Students of the Natural Sciences, desire to express our sincere regret, that researches into scientific truth are perverted by some in our own times into casting doubt upon the Truth and Authenticity of the Holy Scriptures . . . ", the Declaration was an accusation of infidelity against contemporary natural science and its practictioners. Owen received a copy of the declaration from Herbert McLeod, a chemist at the Royal College of Chemistry and one of the initiators of the project. Like almost all of his

colleagues of any reputation, Owen refused to sign and in a bitter reply, accused the declarationists themselves of being un-Christian:

The memorial of which you have sent me a printed Copy commences with a charge against some of our contemporary searchers after Scientific Truth as Perverters of such researches into occasions for casting doubt upon the Truth and the Authenticity of Holy Scripture.

I have the conviction that so grave a charge ought to be less vaguely made, & should be

brought home by evidence against the accused, before its publication.

It is, indeed, a matter of deep concern to me that so many estimable fellow Christians should, according to your letter, be regardless of the risk they run by bearing false witness against fellow-labourers by spreading abroad under their signatures so damaging, and, I trust, unfounded an accusation." <sup>103</sup>

At the same time he used the occasion of an invitation to give the inaugural lecture in a series sponsored by the YMCA to express his views as to the manner in which the Bible should be read in view of the continuing finds by science (Owen 1864). His position was the one he had held for most of his life, the only position that he could hold with the knowledge of Nature which he possessed and, in fact, so much of which he had himself created. The problem was not one of God or his powers, he said, but rather it stemmed from the inevitable progress of human intelligence and knowledge and. therefore, the understandable inability of the earlier transcribers of the words of God to understand properly their meaning. The "Power of God" lay not only in the complex workings of Nature which contemporary scientists like himself were working to understand, but also in the improvements of the ability to understand which, too, was a gift of the Creator. It was an ingenuous argument: rather than attacking the essential meaning of the Bible – the existence of a deity with unfathomable powers – it questioned the fallible shell within which the kernel of eternal truth was enclosed and protected. Concluding his address to the men of the YMCA, after a review of some of the findings of modern zoology, anatomy and palaeontology, more complex than the simple statements of the Bible, he entreated them:

... to put more faith in, or at least to exercise more forbearance towards those who, entrusted with the talent of discovery, labour under the sense of responsibility for its use.

Has aught that is essentially Christian suffered – have its truths ceased to spread and be operative in mankind – since physical doctrines, supposed or "declared contrary to Holy Writ," have been established? Cease, then, to take alarm at each new ray of light that dawns upon the field of Divine Power, till now dark to our comprehension: for, be assured, there remain many others yet to be illuminated by His predestined instruments. The light, bright as it is, contrasted with the darkness it has dispersed, penetrates but a short way into the illimitable theatre of the operations of infinite power. The known is very small compared with the knowable.

Not a bad peroration that! As well as anything else he wrote on the subject it represents his continuing attempt to reconcile his faith in the workings of science and of scientists with his unshakable belief in the existence of any all-knowing and all-doing God to whose glory all Nature and mankind testify.

However even-tempered his position seemed to many of his co-believers. it did not sit well with many for whom the particular words of the Bible were the unassailable testimony to God's existence. For them, the products of science of which Owen was so proud cut the ground from under belief. opening the way to the worst kinds of immorality and social disaster. His YMCA lecture was assailed as irreligious and it was published along with the other lectures in the series only after serious objections were raised regarding what seemed to the zealous to be a too-serious attack on the infallibility of the Bible. For such literalists in general, he had little sympathy although in particular cases, diplomacy required a more understanding approach. Having, apparently, sermonized on biblical truth with some scorn for science, a visiting preacher to Owen's church in East Sheen wrote to apologize after having been "rebuked" by Owen. Regretting that any word of his sermon should have caused Owen inconvenience with respect to the relations between religion and science, he went on to say: "It was not my thought or intention to speak a word against science . . . [but] there are some who in the name of science - let them bear the blame - had dethroned God Almighty and tried to hoist science into his seat." Owen wrote the following comment on the letter: "My Xtian brethren! I trust with God's help, that Science will continue to do for you what she has always done, return you good for evil. A rebuke to Preacher against science – Sheen Church which I deliv'd, in the Vestry, after the Sermon, to the three Clergy & the Ch. Wardens there assembled . . . (to their blank Amazement)." <sup>104</sup>

To those of greater eminence he was gentler. A.A. Cooper, the eminent Earl of Shaftesbury, was bothered, as were many others, by Bishop Colenso's well-considered demonstrations of the unreality of certain statements in the Bible. "I see", wrote the Earl, "that the notorious Dr. Colenso... has quoted you as against Moses... Would you... just look at the Commentary on the Old Testament by the very learned and pious Dr. Gill where this passage is handled? Tho' not full ruminating like the Ox, the Hare seems to have some ruminating qualities. I tremble to have a man like you misquoted..." <sup>105</sup> Owen's reply was clear-cut:

I receive questions on many points from divers individuals, and, it may be, for other ends than a direct reply. If the question admits of such & the questioner seems worthy thereof, I give it the best of my judgment & belief in its truth. That, in my position, seems the duty.

The hare does not chew the cud. In the hare, the rabbit, the rock-covey & all their order, the stomach is simple, and the assimilation of the grass or other herb is provided for, as in the horse by the size & complexity of the coecum & colon. They all have the upper front piece. Cud chewing or rumination (or whatever be the act described, in individual terms, to the camel, in the previous verse) can no more be predicated of the hare than of the horse.

What I learned from Holy Scripture is reverence for truth, pure & simple; & therewith, repugnance and all such paltering with it, as from whatever motive or pardonable degree of ignorance, pervades such annotations as Dr. Gill's & others on statements which affirm that God, in his good time, has been pleased to enable us to know to be, in their plain & literal sense, untrue or incorrect . . . Now, cud-chewing is the definite act of a

well-defined complex structure & characterizes now, as of old, a well-marked group of beasts; but if the term may mean "munching" or anything else that looks like, but is not, rumination, what is the use of language?<sup>106</sup>

More delicate was the correspondence elicited by William Gladstone's public controversy with Huxley in the Nineteenth Century over biblical truth. Gladstone (1809–1898), the then Prime Minister, was both a devoted Christian and a Mosaic fundamentalist. Owen, who had only recently received a D.C.L. as well as an increase in pension through Gladstone's initiative, supported him in his devotion to Christianity but was critical of his position on Mosaic fundamentalism. At Gladstone's request, Owen wrote a long letter in which he detailed the many cases in which modern science contradicted Mosaic teachings as well as later commentary which tended to support them. He apparently felt the futility of the task for he wrote in conclusion, as well as in the spirit of his own religious view, that his attempt to carry out Gladstone's request, "would have been less, if at all, acceptable, I am well aware, if I had not written, in the spirit of candid convictions and sentiments. But, I may add, in the words of my beloved & lamented fellow labourer Adam Sedgwick, the hope that we may meet hereafter in heaven and see such visions of God's glory in the moral & material universe, as shall reduce to a mere germ everything which has been elaborated by the skill of man, or revealed to God's creatures."107

To me, Owen's faith was a simple one and an honest one. It permitted him to open windows onto a landscape previously unseen; but, at the same time, it inhibited him from moving out along its paths to the unseen if not, indeed unknowable, unlimited end.

## Endings

During so long a life and with so wide a circle of friends, associates and acquaintances, there was, of course, the closing of the social circle as one by one they died. Most of the rips in the close-knit social fabric, like that of Broderip (1789–1859), Enniskillen or Egerton or even that of his wife, painful as their loss was in the increasing loneliness and alienation of his later years, were anticipated; but now and then the normalcy of death was emphasized by the tragedy which surrounded it.

The pain of William Buckland's (1784–1856) descent into madness during the last years of his life is illustrated by the concern of his friends. For Owen, the tragedy of Buckland's last years was the greater because of the particular character of their relationship from the beginnings of his career in London. It was Buckland who was his most important sponsor in the community of science; and it was from Buckland that Owen received his basic view of the essential compatibility of religion and science.

As the first professor of geology at Oxford and the founder of its geological museum and, later, the Dean of Westminster in London, Buckland became

the most effective spokesman for, if not the initiator of, that reconciliation between science and revelation which provided the rationale for the acceptance of the accelerating and often disturbing discoveries in the natural sciences during the first half of the century. Confident that there could be no real conflict between the divine and the mundane in the interpretation of the effects of God's intelligence, he changed his views of the particulars of divine creation in accordance with the changing demands of the new data from an accelerating science. His faith in science as a way of knowing and religion as a way of understanding was unbounded; and he transmitted that single faith to a succeeding generation of professionalizing scientists who were the transition to the secular science which characterized the later decades of the century.<sup>108</sup>

Both Owen and Roderick Murchison (1792–1871) were of that generation; and both accepted Buckland's view of nature and the role of science for its understanding. Murchison always regarded Buckland as the initiator of his geological work which, substantively and organizationally, was critical to the establishment of natural science through the middle years of the century. Murchison's importance in geology paralleled that of Owen in the life sciences and palaeontology. Where Owen kept Buckland up to date in comparative anatomy, Murchison was his expert in geology. Both men maintained a close relationship with, and an interest in, Buckland and his family until and after his death.

Buckland's enthusiasm was almost manic and his interests almost eccentric. But it was this which contributed to the popularity of his conversations, his writings and his lectures. In 1845, he was appointed Dean of Westminster, something of a political plum, one of the most influential positions in the Anglican hierarchy. It was an appointment which was, in effect, a public and official recognition of Buckland's philosophy of an integrated science and religion, an integration however, whose foundations were already being eroded by the research for which his enthusiastic and fearless support was in good part responsible. Within a few years, Buckland was exhibiting signs of mental aberration which were initially thought to be little more than an extension of his normal excitement. He had always been something of a manic character; it was an important element in his popularity as a lecturer as well as his willingness to shift ideologically based views in the face of new evidence from science. By 1849, it had become worrisome to family and friends. Early in 1850, Murchison wrote to Owen with great concern:

On coming home I found that Lady Murchison had received a very distressing letter from Mrs. Buckland.

It appears that after dinner & after the M D had seen him, the Dean committed much greater excesses than ever in respect to his own person – beating his head & scratching himself so as to produce alarm.

There can be no doubt that such scenes *in the face of all his children must not* be permitted. It is not enough that our dear friend should be rational with us on points of science; for if he is *permitted* to go on daily with these violent out-breaks, rely upon it the mental disease will take *such a root* that nothing will remove it.

The younger children said "Why Papa must be acting" & the older ones are horror stricken.

Under these circumstances pray see Sir B. Brodie who is a man of perspicacious & judicious conduct, & try to take some *decisive* step, by which the Dean shall be *removed* from his family & brought to reason by the union of control & medical care.

It is of course a most delicate matter to advise upon; but *from experience* of successful results & the re-establishment of sanity by gentle but resolute coercion with a separation from the causes of irritation – and therefore I speak out.

Sir Benjamin & yourself are however the best judges possible & I only urge you to lose no time in acting, or the worst may happen.

The Step may be taken very quietly & nothing need be known of it till our dear friend is himself again which God grant may soon be the case. 109

Over the next months rumours spread as to Buckland's illness and the various treatments to which he was subject. On hearing one such rumour, an old friend and fossilist wrote in indignation to Owen:

No excuse will be required from me for informing you that Dr. Buckland is reported to be

lying at "the Clapham retreat" amongst outrageous madmen.

If he were in such a situation I should be ready to force the doors of the place open to release a gentleman and scholar like Buckland, while I am filled with indignation to think of such a fate for one who rendered me good service in his time, relative to my fossils.

If the report be false Dr. Buckland's family ought to have an opportunity of strangling it. I am bound to believe that Mrs. Buckland and the family are entirely innocent. You, if satisfied of Dr. Buckland's situation, can draw their attention to the report...<sup>110</sup>

A few days later, having been assured by Owen that all necessary care was being given to Buckland by his family, Hawkins wrote again that he was pleased to learn, as he had suspected, that the "family could not abandon Dr. Buckland to the direst of fates... My heart bleeds for him as it is". He concludes: "...and I always fervently pray God to assist him in such great afflication<sup>111</sup>.

A few few weeks later, Frank Buckland, Buckland's eldest son, who inherited all of his father's friends and some of his interests, wrote to Owen to tell him of the failure so far of medical treatments to stem the disease:<sup>112</sup>

Experiment did not succeed. The Dean would not speak to my uncle and looked another way. He would answer no questions and make no remark and seemed glad when he took his leave. They have tried putting objects of natural history in his room but the Dean requested that they should be removed.

I take this opportunity of thanking you for your advice of yesterday and for your great

kindness in the matter. 113

During the illness, Mary Buckland, the Dean's wife, with more hope than was justified, wrote that she was not permitted to read him any correspondence relating to business. "I have been," she continued,

in a state of much anxiety about my husband. He is now, I trust, convalescent, but extremely weak & requires the utmost care... Dr. B. now gets into the drawing room – he is afraid of trying his legs I think, so he rests his arm on Frank's neck & manages

pretty well to ascend the steps that lead into the room . . . I hope [Mrs. Owen] will never have to nurse you through such an illness as Dr. B. has had, produced entirely by overwork. 114

Buckland died on 14 August 1856. An autopsy, "ascertained that the brain itself was perfectly healthy in every respect; but the portion of the base of the skull upon which the brain rested, together with the two upper vertebrae of the neck were found to be in an advanced state of caries, or decay, assumed to be the result of severe exercise of the brain in thought." A physical cause there may have been. Is it not possible, however, that Buckland's madness and the suicide on Christmas Eve following Buckland's death of an equally popular expounder of the Bucklandian view, Hugh Miller, were both related to the breakdown of Buckland's optimism during the 1850s as the challenge to revealed religion became more acute? Here truly, was a "second coming" in which, as Yeats wrote, "Things fall apart; the centre cannot hold;/ Mere anarchy is loosed upon the world,/ The blood-rimmed tide is loosed and everywhere/ The ceremony of innocence is drowned;/ The best lack all conviction, while the worst/ Are full of passionate intensity."

"The ceremony of innocence." How innocent the wife of Robert Latham, distinguished linguist and ethnologist, whose suffering she recounts in a letter begging for help in the midst of her distress:

Last year you kindly promised my husband Dr. R.G. Latham a letter of recommendation to the Royal Literary Fund – he became too ill & has been ever since to attend to any business & now I am about to apply on his behalf as he is suffering from softening of the brain there is no possible hope of recovery he is perfectly helpless & childish, a letter from you if you will give me one would be of powerful use. The expenses of this illness including that of a nurse to assist me are more than our limited budget will meet. We have only my Husband's pension of £100 per annum which ceases at his death & £20 per annum of my own. We have had the misfortune to lose two sons & two daughters by consumption just as they were able to assist us our only surviving daughter is a daily governess & in delicate health if you think our case worthy of your notice I should ever feel grateful to you & would kindly send me one I will forward it to the Committee by the 1st of January [undated] . . .  $^{116}$ 

Owen responded the next day with a testimonial to the value of Latham's contributions in linguistics and science and recommending him for a grant from the Royal Literary Fund. A month later, he received an acknowledgement from Mrs. Latham thanking him and reporting that she had received a grant of £65. Latham died in 1888.

Similarly tragic in a personal sense, but of a kind not unique in the social atmosphere of Victorian Britain, was the case of Simon Rood Pittard (1821–1861). An aspiring naturalist of no particular talents which would ensure him a professional career in England and recruited through Owen's recommendation for a position at the moribund Australian Museum, he emigrated to Sydney in 1860 where he hoped to build a new and successful career. A year after his arrival, he took the occasion of the return of Sir Daniel Cooper, a very wealthy acquaintance with a large collection, to report on his progress. Pittard's long description of the various items of zoology and

palaeontology accompanying Cooper illustrate the superficiality of his own knowledge and understanding of the problems of natural history. He was, however, enthusiastic in his new career and looked forward to a successful future. Once all the natural history is out of the way, Pittard moves on to his personal affairs:

I enjoyed the voyage immensely and was extremely sorry when it came to an end. Tis curious that my "harem" agreed with me in this – my "harem" consisted of besides my wife and seven children, three spiritual wifes (to use a Mormonite term) – to wit my maiden Cousin, my Aunt, and my Wife's Mother. We all enjoyed it immensely but I suppose we were all the more comfortable for being the only passengers in the ship.

I called on Sir Wm. Denison immediately on arriving and the kind manner in which he received me reconciled me to the place at once. I next called on W.S. Macleay. I did like Sydney very much indeed, and would not on any account return to London. The climate is glorious and the society exceedingly agreeable. What struck me most in regard to the Sydney people, and what contributed largely to my content and happiness, was the well-fed appearance of the working people. You never see a face expressive of starvation here. The starved faces in St. George-in-the-East have often made me quite ill – the miseries of the people were a continual nightmare to me; and now I sometimes feel like a coward for

going away from them.

On the whole I have been very happy since my arrival here but the departure of Sir Wm Denison, who is gone to be Governor of Madras has lately been a great unhappiness to me. It would be difficult even in imagination, to conceive a better man than Sir Wm. Many people do not like him, they say, but these must be very thoughtless or bad people. His manner was somewhat stern, but, through it, once you saw the intelligent, the just, the considerate, the courageous man – master of himself – not to be misled or daunted by anything whatever. How happy a country would be with him for its absolute sovereign! What fools the Australians were to ask for self government whilst his reign lasted! He took great interest in the Museum – came here two or three times a week. His bearing was: "I can appreciate you rightly; do your duty and I'll uphold you." Oh! the comfort of such a ruler! Now all is changed – I have to be humouring and humbugging one old selfish oddity and another.

I found that £500 a year was an insufficient salary here – it is not equal to £300 in London – "everything" is so much dearer. I told Sir Wm Denison of this and he listened to me very considerately; begged me to let the matter rest awhile. After several months he moved that my salary should be £700 and that arrears should be paid to me. He however only succeeded in getting me £600 without arrears. It seems funny that the Trustees withold any part of the sum (£700) voted by the parliament for my salary when, as is the case, The Governor and the Colonial Secretary wish that I should have it, and

refuse to allow it to be paid to the Trustees for any other purpose.

I am most cruelly disappointed in Wm Sharpe Macleay. I expected to find in him a good friend; at all events an intelligent, just and considerate man. But I find instead a very rude, mannered, overbearing, insolent, old man. I heard in England that he was bad tempered but he seems to me to be worse than that – an evil disposed and delighting in malice. I have not seen much of him, but, as to his intelligence, I have not yet found out anything more than would make a first rate curiosity dealer; he is a catalogue in breeches – that's all I can make out of his scientific accomplishments. It is astonishing to me how anybody tolerates his rudeness. He invariably interrupts anybody that attempts to speak in his presence at the third or fourth word. He would even interrupt the Governor Gen'I in this rude insolent way. Such a man is enough to ruin an enterprize wherein he has any influence, and now Sir Wm Denison is gone I fear the Australian Museum must stand still until Wm Sharpe Macleay has shuffled off this mortal coil. If science usually

produced Macleays it ought to be scouted from the world as a nuisance and an evil – but, thank god, it is not so  $\dots^{117}$ 

Conditions did not improve with time. Three months later, Pittard wrote again to his "Master" with further complaints against both the trustees and Macleay. "These Trustees are a sore trouble and vexation to me. They are genial gentlemen enough but utterly thoughtless and careless about the Museum and used to follow Macleay. Hence all Macleay's freaks and insolences are accepted and endorsed by them. I really begin to think that Macleay's brain is somewhat crazed with age and gout. There is no hope of my achieving anything important here until Macleay is gathered to his fathers. Whatever he might once have been he is now merely a malicious egotist. I think he is very miserable. God save me from such an old age." 118

Apparently his prayer was heard for within a few months Pittard was dead. His family, so enthusiastic at the prospect for their future in the new land only a year earlier, was left without funds either for support or for passage home to England. In Sydney, the government provided enough to pay for the homeward passage and a small pension was raised for their future. It was impossible for her to stay in the Colony where she might be taken advantage of, wrote a friend, for although "most amiable" she is "also a most helpless & unmanaging person I think almost the worst I met with". 119 Back in London, hearing of Pittard's death, Owen initiated an appeal for funds to supplement

those raised in the Colony for her and her now eight children.

Deaths, failures and blocked futures were all a part of Owen's social world as they were of the society as a whole. Nor was Owen himself immune from the unexpected, the tragic event that causes one's personal universe to tremble if not, indeed, to shatter altogether. Late in life, settled in his retirement, accepting, though not enjoying, old age and the physical breakdown which accompanied it, he suffered what must have been the most difficult blow he had ever received. His wife's death in 1873, preceded by a long period of increasing illness, was anticipated; the deaths of old friends were expected; but it was the sudden and essentially tragic suicide of his son on 13 March 1886 which was beyond understanding. It was an incomprehensible shattering of an ordered world. His letter a few days later to an old friend and neighbour, describes not only the event but the inability to understand it:

For such consolation as I can now feel, I thank you from my heart...

[My son] was happily married, the father of seven children. He and Mrs. Owen dined with us on Sunday, 7th, as happy as usual. He had shortly before gone to Cambridge to place his son at Trinity College. On Saturday morning, 13th, he read Prayers to his family at home, as usual. After breakfast accompanied by his wife to feed poultry in their garden; then took his usual train to work at the Foreign Office; after which he left his friends and fellow officials there as usual. Conceive the distress of his home at his non-return that afternoon and night; than a visit by a policeman early on Sunday morning to report a finding of the body in the river at Staines.

My son was prudent and economical, a good and kind husband and father, to myself

in every respect a most satisfactory and affectionate son . . .

What then could be the cause?... There must have been a sudden and overwhelming access of brain affection, under which the poor sufferer had wandered along the river side instead of to his home from Mortlake. He had placed on the bankside at Staines his hat and in it had placed his purse, watch, and address card: it was found by a night policeman.<sup>120</sup>

Again, as with Buckland, the cause of so aberrant an end was sought in some physical ailment. William Owen was 49; he had worked in the Foreign office since he was 17 at a position procured through the influence of his father's friends; he was burdened with a large family, a demanding wife, and an assertive father. He was tired of life and, I think, with reason, felt trapped in a life which did not suit his tastes.

From his death his father took over the care of his daughter-in-law and her seven children, all of whom moved into Sheen Lodge with him. Although the death of his wife had been the inevitable and expected end after years of physical decline, his son's suicide came as a shock from which he never completely recovered. He kept to his library and adjoining bedroom upstairs; but as his great-grandson recalled through the tales of his mother and her sisters, his presence was a source of terror to his grandchildren. <sup>121</sup>

#### Notes

- (1) For a description of the Owen archive and the nature of its contents see Gruber 1992 in this volume and Gruber 1985.
- (2) J.E. Bicheno (1785-1851) to Richard Owen, June 26, 1841 Owen Collection 4:134/137.
- (3) Charles Lyell (1797–1875) to Richard Owen, 25 February 1849, Owen Collection 18:149/50.
- (4) Louis Agassiz (1807–1873) to Richard Owen, 19 August 1858, Owen Collection 1:45/8; Agassiz concludes the letter with a brief description of his own recent work, particularly with the Acalephs whose classification had been greatly aided by his recent work in the Gulf of Mexico. Agassiz had been elected a Fellow of the Royal Society in 1838. He was correct with reference to Peirce who was elected in 1852; Bache, probably through his efforts with Owen and with his friends in England, was elected in 1860; and Dana, on his own merits, long after, in 1884. Henry, Wyman and Leidy were never elected. (Heindel 1938, for which reference I am indebted to Roy Goodman of the American Philosophical Society.)
- (5) Carl Herman Conrad Burmeister (1807–1892) to Richard Owen, 10 September 1872, Owen Collection 6:213/4.
- (6) Actually 1839, see Cunningham 1839; Buckland wrote Owen on February 24, that, "The paper on fossil rain comes on next Wednesday". Owen Collection, Royal College of Surgeons (RCS).
- (7) John Cunningham to Richard Owen 13 December 1858, Owen Collection 9:150/3; Owen was then writing an article on palaeontology for the Encyclopaedia Brittanica which was the forerunner of a longer and much more detailed review of the discipline (Owen 1860).
- (8) This paper is not an appropriate place to consider the often vexed question of the distinction between amateur and professional. However, it is possible that the distinction was clearer and more important in zoology well into the nineteenth century when there

was a distinction between simple description, no matter how precise, and classification. i.e. the systematic arrangement of the products of nature, a task which required an organizing skill and a conceptual view unnecessary for the discovery and/or description of a single specimen. When the numbers were relatively small, even the small-time collector, versed in the tenets of one system or another, could handle a good part of the total system. But with the tremendous increase in the products of nature, past and present, occasioned by the "progress" of science, a more extended degree of specialized. or professional, knowledge was required. Farber (1971) notes, for instance, that the ornithological collection in the Paris natural history museum increased from 463 in 1793 to 3411 in 1809; and in the Berlin zoological museum from 2000 in 1813 to 13,760 by midcentury. Obviously, if for no other reason than simple classification, there was vast need for a more detailed, specialized ornithological knowledge. In addition, there was a need for a greater consensus in the naming of species and genera even when the limits of those taxa were agreed upon. That problem was raised at the BAAS meeting in 1842 when a committee on nomenclature was established. These were problems which could not be successfully addressed by amateur collectors with their relatively few specimens.

- (9) Unlike the other professions and probably because it had not yet developed to the point where licensing bodies determined professional status science provided an available avenue for such career shifts. Charles Lyell was a lawyer before becoming full-time geologist and William Broderip, Owen's close friend, was a barrister and magistrate while contributing to natural science as a popular writer; Joseph Prestwich was a wine merchant while making his reputation as a geologist; and John Evans earned his high reputation as a numismatist and prehistorian while engaged as a paper manufacturer.
- (10) John Blackwall (1790-1881) to Richard Owen, 6 November 1844, Owen Collection 4:157/8.
- (11) See e.g. Sweet 1972, 1974. Sweet notes that as early as 1696, a schedule of instructions was issued for collectors, probably by John Woodward; Walker (1731–1803) published in *The Bee* in 1793 a "Memorandum... to a young gentleman going to India"; Jameson was distributing as early as 1817 instructions "to the different ministers and public servants abroad" with a view to adding to the collections of the British Museum. These are much more complete than Walker's and include directions for the preparation of specimens which were to be sent as additions to the Museum's collections. See also Gruber 1969. It is probable that Owen received some of the stimulus for the use of travellers and colonial officials as providers of information and, especially, specimens for the Hunterian from his experiences in Edinburgh although, except for the influence of Barclay, the effect of his academic year in Edinburgh upon his subsequent career is still unclear.
- (12) Richard Owen to the Bishop of Mauritius, 16 December 1865, Owen Collection, Temple University Library, 4:627; the actual discoverer of the bones was George Clark, whose primary interest in his discovery was to sell the bones at as high a price as he could get. With Owen's support the British Museum did purchase them for £100. See the 9 letters from Clark to Owen in 1865 and 1866 (Owen Collection: British Library, 117–135).
- (13) J.J. Chapman to Richard Owen, 28 January 1851, Owen Collection 39:42.
- (14) Robert Lambert Playfair (1828–1899) to Richard Owen, 30 August 1863, Owen Collection 21:386/8.
- (15) Joseph Portlock (1794-1864) to Richard Owen, 13 May 1849, Owen Collection 21:401/2.
- (16) William Williams (1800–1879) to Richard Owen, 12 February 1846, Owen Collection 27:36. 5 November 1847, Owen Collection 27:36a/37; Richard Owen to Gideon Mantell, 25 September 1847, Mantell Collection, Turnbull Library; Gideon Mantell to Richard Owen, [23 December 1847], Owen Collection 18:410/11; Walter Mantell to Richard Owen, [1856], Owen Collection 18:436/7; Julius Haast to Richard Owen, 5 April 1868, Owen Collection 14:115/20; for more detail, see Gruber 1987, 1987a.

- (17) Hugh Cuming (1791–1865) to Richard Owen, 5 November 1839, Owen Collection:RCS, published in full in Dance 1980.
- (18) Hugh Cuming to Richard Owen, 24 December 1836, Owen Collection: RCS.
- (19) Hugh Cuming to Richard Owen, 14 February 1839, Owen Collection: RCS.
- (20) After his death in 1865, his collection of 82,992 specimens, to whose enlargement he had worked all his life, was bought by the British Museum with firm support from Owen for £8000, allocated as a special grant for its purchase by Parliament. (Gunther 1912, 2:19).
- (21) See, for instance, a series of scattered letters between Owen and George Grey (Owen to Grey, 26 June 1837, in the Mitchell Library, Sydney; Grey to Owen 22, July 1837, British Library add mss 42583: 125/6; Grey to Owen, 19 August 1838, Mitchell Library, Sydney; Owen to Grey, 8 May 1839, Grey Collection, Auckland Public Library in which Owen instructs Grey when, as a young man in his mid-twenties, he was preparing for his two expeditions to explore Australia's interior, both of which ended in disaster.
- (22) Ludwig Becker to Richard Owen, [1855] Owen Collection 3:21/3.
- (23) Francis Campbell to Richard Owen, 10 May 1866, Owen Collection 6:268/9.
- (24) William Branthwaite Clarke (1798–1878) to Richard Owen, 18 June 1861, Owen Collection 7:143/5
- (25) See George Bennett (fl. 1829–1888) to Richard Owen, 4 February 1833, Owen Collection: RCS, OL 1/7, published in *Proceedings of the Zoological Society* (1833) 1:82; 24 February 1834, RCS OL6:16/17. (Bennett 1835, 1860) Most of Bennett's letters to Owen have been published in Coppleston 1955; see also Gruber 1991.
- (26) George Frederick Bennett to Richard Owen, 28 June 1879, Owen Collection 3:233/4.
- (27) George Frederick Bennett to Richard Owen, 27 November 1879, Owen Collection 3:235/6.
- (28) Aulie (1974) has rescued Bain from history's oblivion and placed his discoveries and Owen's work on them in the context of the gradual awareness that Bain's discoveries and Owen's classification of the Cynodontia and Theriodontia were significant steps in the understanding of both reptilian and mammalian evolution. Unfortunately, despite the clues they provided for an understanding of the rise of the mammals, Owen's own "progressive system" was too closed for him to take advantage of the new data which the Bains provided him. I am grateful to James Moore who provided me with a copy of Aulie's very useful article.
- (29) A.G. Bain (1797-1864) to Richard Owen, 25 September 1848, Owen Collection 2:33/4.
- (30) A.G. Bain to Richard Owen, 2 December 1851, Owen Collection 2:37/8.
- (31) A.G Bain to Richard Owen, 6 October 1863, Owen Collection 2:39/40.
- (32) Thomas Bain to Richard Owen, 4 December 1881, Owen Collection 2:ff89.
- (33) Thomas Bain to Sir Henry Barkly (1815–1898), 21 May 1876, Owen Collection 2:44/5 [copy sent by Barkly to Owen along with a letter] (6 June 1876, Owen Collection 2:153/4) in which he recommends support for Bain's collecting activities in the Karoo; Owen replied immediately on receipt of Barkly's recommendation (5 July 1876, Owen Collection 2:155/6) describing the importance of the Karoo beds for the science of palaeontology and saying that he has recommended to the British Museum that it acquire Bain's collection.
- (34) Draft of a report to the Trustees of the British Museum from Richard Owen as Superintendent of the Department of Natural History, 5 July 1876, Owen Collection 2:157/8.

- (35) Thomas Bain to Richard Owen, 11 November 1877, Owen Collection 2:57/8.
- (36) Thomas Bain to Richard Owen, 15 February 1878, Owen Collection 2:62/2.
- (37) Thomas Bain to Richard Owen, 20 May 1878, [copy] Owen Collection 2:73/6, 88/9. Colbert (1968) in praising Robert Broom as the pioneer South African palaeontologist, does not mention the difficult work of the Bains who, though admittedly amateurs but gifted ones, provided, under the most difficult field conditions, the fossil specimens which, processed by Owen and Seeley, first excited his attention and directed his efforts to the Karoo deposits at the end of the century (see Aulie 1974).
- (38) As a result of his first survey, he named various geological features after the leaders of British science.
- (39) Through the support of his friends in the London scientific community, he was elected FRS in 1867, the second New Zealander to be chosen for that honour.
- (40) Julius Haast to Richard Owen, 10 January 1872, Owen Collection 4:150/3.
- (41) Julius Haast to Richard Owen, 27 October 1877, Owen Collection 14:181/5.
- (42) Richard Owen to G.B. Halford, 17 October 1877, Latrobe Library, State Library of Victoria, Melbourne.
- (43) John Brown (1780-1859) to Richard Owen, 1 November 1842, Owen Collection 6:34/5.
- (44) William Clark (1788-1869) to Richard Owen, 29 December1850, Owen Collection 7:184.
- (45) James Carter (1813-1895) to Richard Owen, 27 October 1851, Owen Collection 6:360/1.
- (46) Richard Owen to Samuel Beckles (1814–1890), 12 April 1855, American Philosophical Society Library.
- (47) Enniskillen, when both he and Owen had long passed the outing stage, wrote in a letter to his old friend: "Neither of us are so young as we were; nor nearly so active as when we used to clamber over the Cliffs with Mary Anning". (William Cole to Richard Owen, 19 August 1885, Owen Collection 11:319/20.)
- (48) Thomas Hawkins (1810–1889) to Richard Owen, 1 June 1842, Owen Collection 14:512/3. Hawkins was a major collector, the first of whose collections was bought by the British Museum in 1834 for £1250. (See Desmond 1985, p44 for brief comment). Dissatisfied with the manner in which the Museum was handling that collection and a subsequent one which it had acquired, he was hoping that Owen could persuade the British Museum to purchase his present collection.
- (49) The wealthy collector could be expected to sell his collection. Enniskillen, going blind at the end of the 1870s, offered his collection for sale to the British Museum and hoped that it would be bought: "I should be sorry to see it leave the country... I have been 55 years getting it together having bought the first specimen from Mary Anning [a well-known seller of fossils which she found eroding out of the cliffs at Lyme Regis] in 1824". (William Cole to Richard Owen, 15 July 1879, Owen Collection 11:301/2).
- (50) In the Owen Collection, there are 95 letters from Enniskillen and 60 from Egerton. Unfortunately, the letters from Owen to his friends are not extant: those to Egerton were probably destroyed in the fire at his country residence, Oulton Park, in the early 1920s; and those to Enniskillen dispersed by his son and successor who had no interest whatsoever in his father's palaeontology.
- (51) Sir Philip Egerton (1833–1891) to Richard Owen, 24 December [probably 1841] Owen Collection 11:24/5.
- (52) Forbes (1815–1854) was the most promising of a "younger" generation of naturalists. He

worked with the Geological Survey under de la Beche before accepting an appointment to succeed Robert Jameson as Professor of Natural History at the University of Edinburgh in 1854 which he had just barely inaugurated before his death at the end of the year. Like other "fossilists" he had visited Efford House. After one such visit on 28 July 1847, soon after Owen's, he wrote to a friend that Lady Hastings, "is one of the most excellent (and without exception the cleverest) women I ever met. Her husband, too . . . is an exceeding nice person. He is an amateur chemist, she a 'fossilist', and knows her work, and both are enthusiasts in music and drawings; both playing and singing admirably. There is not the slightest grain of nonsense or affectation in either . . . even though they be – only in name – aristocrats." (Wilson and Geikie 1861, 423–424).

- (53) See R.S. Owen 1895, 1:296–7; it was at this meeting that the two prepared their papers on some of her fossils from the cliff for presentation to the British Association (Hastings 1848, Owen 1848) a few days later. While at Efford House, Owen took the flute (he was also a 'cellist') part in a quartet in which the Marchioness played the harp and her husband and daughter the 'cello and piano. Owen, who was an opera enthusiast, was also much impressed by her voice, "an excellent vocalist with two octaves clear and more".
- (54) Barbara Hastings to Richard Owen, nd, Owen Collection 14:483.
- (55) Barbara Hastings to Richard Owen, 3 August, ny, Owen Collection 14:471/2.
- (56) Barbara Hastings to Richard Owen, nd, Owen Collection 14:475/6.
- (57) Barbara Hastings to Richard Owen, 28 May, nd, Owen Collection 14:370.
- (58) Sir Philip Egerton probably introduced the two when Owen was examining various collections for his report on British fossil mammalia. Owen ascribed her "rare specimen" to Lophiodon. See Owen 1848, 310.
- (59) Barbara Hastings to Richard Owen, nd, Owen Collection 14:404.
- (60) Barbara Hastings to Richard Owen, 7 November, [1848], Owen Collection 14:465/6.
- (61) Barbara Hastings to Richard Owen, 7 November, [1848], Owen Collection 14:458/60.
- (62) Barbara Hastings to Richard Owen, nd, Owen Collection 14:322/23.
- (63) Richard Owen to Charles Moore, 30 July 1870, Archives of the Geological Society of London. Owen christened Moore's find as *Microlestes moorei*.
- (64) Thomas Craggs to Richard Owen, 4 July 1867, Owen Collection 9:50/1. For the paper referred to, see Owen 1867.
- (65) Thomas Craggs to Richard Owen, 10 July 1867, Owen Collection 9:52/3.
- (66) Richard Owen to E.C. Hobson, 25 May 1845, Latrobe Library, State Library of Victoria, Melbourne. I am indebted to Gary Tee of Auckland, New Zealand, for a copy of this letter. Hobson (1814–1848) was a native of Tasmania. One of Australia's first native-born natural scientists, he went to London to complete his studies where he was highly regarded by Owen and other comparative anatomists there and where, prior to his return to Tasmania in 1838, he first met Grant and Owen.
- (67) Richard Owen to an unnamed correspondent, 22 December 1845, Mantell Collection, Turnbull Library, Wellington, N.Z.
- (68) Richard Owen to E.C. Hobson, 11 May 1841, Latrobe Library, State Library of Victoria, Melbourne. I am indebted to Gary Tee of Auckland, New Zealand, for a copy of this letter.
- (69) Of course, there were other older recognised professions which existed side by side with the emerging profession of scientists. Lyell was barrister and a professional scientist while Broderip was a professional barrister but not quite recognized as a professional

- natural scientist. There were professional physicians and surgeons, of whom some became professional natural scientists while others merely dabbled in the subject as amateurs. Already early in the century, however, there were those who argued that one could not practice in both and used Owen as an example.
- (70) Sir Philip Crampton (1777–1858) did become an active member of the Royal Zoological Society of Dublin and served as its president. While not an active natural scientist, he saw himself as a contributor to what was essentially the educational program which Ball was defining. As he wrote in sending Owen a copy of his lecture to the Society, which was based on notes Owen had provided him, it was not a contribution to science," but merely a communication read to the noblemen and gentlemen who take an interest in our Society but who are not naturalists". (Sir Philip Crampton to Richard Owen, 26 December 1850, Owen Collection 9:80/1.) In 1853, still active, Crampton secured for the Society a "most gi[g]antic Plesiosaurus which we are about to set up in our Zoological Garden". (Robert Ball to Richard Owen, 14 March 1853)
- (71) Robert Ball (1802–1857) to Richard Owen, 20 September 1839, Temple University Library.
- (72) William B. Carpenter (1813–1885) to Richard Owen, 23 September 1842, Owen Collection 6:308/11.
- (73) George J. Allman (1812-1898) to Richard Owen, 7 January 1849, Owen Collection 123/4.
- (74) George J. Allman to Richard Owen, 4 April 1849 Owen Collection 1:125.
- (75) G.T.B. in the Dict. of National Biog. Biographical note on R. Ball.
- (76) Robert Ball to Richard Owen, 14 March 1853, Owen Collection 2:133/134.
- (77) James Murie (1832–1925) to Richard Owen, 28 August 1874, Owen Collection 20:122/123. Despite his early entry into the field and the attempt to get the "interest" of influential men on his behalf, Murie did not get the position but did succeed in becoming secretary of the Linnean Society.
- (78) From almost the beginning of his appointment to succeed Clift as curator of the Hunterian Museum in 1842. Owen felt too much constrained by the demands of the Council of the Royal College of Surgeons who were suspicious of the relevance of his research and, I suspect, jealous of his increasing public reputation and the demands which it made upon his time. However, given the paucity of positions which he could occupy, the opportunities to move advantageously were rare. There is no question that when Koenig, who had been for many years Keeper of the Department of Mineralogy at the British Museum, died suddenly at the end of August 1851, Owen felt that finally, the time had come, for him to move to the British Museum. "This event may make some change in our future prospects and whereabouts," he wrote to his wife as soon as he heard the news. (Richard Owen to Caroline Owen, 1 September 1851, Owen Collection RCS). In the event, although he received waffling letters from his geological friends, it was clear that the geologists did not consider him enough of a geologist – his palaeontology was in something of a limbo between anatomy and geology – to support his appointment which was considered by many to be a foregone conclusion. Commiserating with Richard Horne, who, frustrated by the neglect of his literary efforts and consequent lack of financial reward, was about to emigrate to Australia, Owen wrote of his position in the Museum, and said he would, "be compelled to emigrate to the U. States, where at present there exists the best market for the scientific lecturer" (May 20, 1852, APS.).
- (79) James Nichol (1810–1879), formerly secretary of the Geological Society and then professor of natural history at the University of Aberdeen, to Richard Owen, 25 November 1854, Owen Collection 20:292/3; Owen sent his ambivalent recommendation two days later in which he spoke only of his "knowledge of geology and of his intimate acquaintance of invertebrate fossil animals". (Richard Owen, 27 November 1854, Owen Collection

- 20:291.) Nevertheless, on the day he received Nichol's letter, he sent his inquiry to Robert Christison, a distinguished member of the medical faculty and its dean, asking for information.
- (80) When the prime candidates, Huxley and Owen, removed themselves early from the contest, Allman pressed his candidacy and was eventually chosen for the professorship as originally defined. He held the position until 1870.
- (81) Robert Christison (1797–1882) to Richard Owen, 28 November 1854 Owen Collection 7:105/6.
- (82) W.P. Alison (1790-1859) to Richard Owen, 28 November 1854 Owen Collection 1:72/75.
- (83) Robert Christison to Richard Owen, November 29 1854, Owen Collection 2:96/97.
- (84) John Hutton Balfour (1808–1884) to Richard Owen, 30 November 1854, Owen Collection 2: 96/97.
- (85) See the Duke of Argyll to Richard Owen, 8 December 1854, Owen Collection 1:191/2; and [nd], Owen Collection 1:189/90 in which he asks Owen whether he has a serious interest in the Chair.
- (86) Richard Owen to the Duke of Argyll, (draft), 7 December 1854, Owen Collection: RCS 345.
- (87) Richard Owen to John Hutton Balfour, [1 December 1854], PC3:436, Owen Collection: RCS.
- (88) Martin Barry (1802–1855) to Richard Owen, no date, Owen Collection 2:253; Owen noted the importance to him of the credit by writing on the note, probably later as he was editing his correspondence, that it is "important to my Biographer", assuming already that there would be one, and quoting the passage which he reminded Barry that he had ignored.
- (89) Thomas Blizard Curling (1811–1888) to Richard Owen, 25 September 1846, Owen Collection 9:166/7.
- (90) For a discussion of this case see Campbell 1979; as he points out and as I believe, there was no intention by Owen to have stolen the credit for the discovery from Paget, although others of his colleagues, more hostile than Paget, suggested that it was another example of Owen's failing. Paget claimed, as was indeed the case, that to him belonged the credit of having been first to observe and be aware of the organism during a dissection; to Owen rightfully belonged the credit for describing its anatomy and determining its place in nature by "naming" it.
- (91) Quoted in Campbell 1979, p552 from an unpublished letter from James Paget to Charles Paget in the Paget Collection in the Royal College of Surgeons.
- (92) For a complete record of the complaints and counter-complaints of Nasmyth and Owen, see Report of the British Association for the Advancement of Science, 1841: 4–23.
- (93) Thomas Hodgkin (1798–1866) probably to Richard Owen, 8 January 1841. I am indebted to Amalie Kass, the biographer of Hodgkin, for her transcripts of this and the following letter, the originals of which are in the Hodgkin Collection in the Society of Friends Library, London.
- (94) Thomas Hodgkin to Richard Owen, 15 January 1841 copy provided by Amalie Kass from Friends Society Library, London.
- (95) William Buckland To Richard Owen, 24 February [1839], Owen Collection: RCS.
- (96) Owen had been collecting evidence on longevity for several years. In every case of a reputed life-span excessively beyond the normal whose case might provide some support for the Mosaic life-spans, he found errors which did not allow him, as a scientist, to accept

- them. It was another test by observation of Nature of the analogous observations in the Bible in accordance with the new criticism to which he was a cautious adherent.
- (97) John G. Burgon to Richard Owen, 12 June 1887, Sherborn Collection, f. 186, Cambridge University Library.
- (98) Richard Owen to William Owen, 30 August 1851, Owen Correspondence, 2:353, Temple University Library.
- (99) C.S. Bagot to Richard Owen, 26 March 1888, Richard Owen to C.S. Bagot, draft [ca. March 26, 1888], British Library, add mss 39954, ff662/3.
- (100) This is a copy by Caroline Owen in the Owen Collection supplement 16/17.
- (101) Richard Owen to Miss Bayley, 30 March 1851, James S. Copley Library, La Jolla, California.
- (102) Brock and Macleod (1976) have analyzed both the declaration and its initiators as well as those at a lower level of scientific activity and reputation who were its major signers.
- (103) Richard Owen to Herbert McLeod, 10 May 1864, Cambridge University Library add 5989:17; see Brock and McLeod 1976 fn 10 for details regarding the document and something of its history.
- (104) John Faunthorpe to Richard Owen, 19 June 1876, Owen Collection 12:184/6.
- (105) A.A. Cooper to Richard Owen, 3 April 1863, British Library [12] add 110/111.
- (106) Richard Owen to A.A. Cooper, 4 April 1863, TU4:576.
- (107) Richard Owen to William Gladstone, 21 October 1885, British Library 44492:205/12.
- (108) Nicolas A. Rupke, The Great Chain of History: William Buckland and the English School of Geology 1814–1849; William Buckland, Geology and Mineralogy Considered with Reference to Natural Theology, (2 vols, London 1836).
- (109) Roderick Murchison to Richard Owen, 25 January 1850.
- (110) Thomas Hawkins to Richard Owen, 16 May 1851, Owen Collection 14:516/7.
- (111) Thomas Hawkins to Richard Owen, [May, 1851], Owen Collection 14:521.
- (112) While a pleasant enough person with whom Owen maintained a friendly, almost paternal, correspondence until his death in 1880, Frank Buckland was generally unsuccessful. Alfred Newton, described him, unkindly I think, to Walter Buller in New Zealand as "the greatest fool that was ever called a naturalist". Alfred Newton to Walter Buller, July 23 1876, quoted in Galbreath (1989) from Buller's "Notes on New Zealand Ornithology with an Exhibition of Specimens", Transactions of the New Zealand Society, (1896) 28:326–358.
- (113) Frank Buckland to Richard Owen, 20 June 1851, Owen Collection 6:125/6.
- (114) Mary Buckland to Richard Owen, 6 January [ny], Owen Collection 6:123.
- (115) Gordon, E. 1894 in The Life and Correspondence of W. Buckland. . . By Buckland's daughter, Mrs Gordon. 288pp. London.
- (116) Elizabeth Latham to Richard Owen, 13 December [ca 1886 or 7], Owen Collection 17:158/9.
- (117) S.R. Pittard (1821–1861) to Richard Owen, 18 February 1861, Owen Collection 21:367/74.
- (118) S.R. Pittard to Richard Owen, 15 May 1861, Owen Collection 21:375–6. One wonders how Owen felt at receiving these comments about his old friend; for he was, at the same time, embroiled in a conflict with his younger colleagues, led by Huxley whose comments

- about him in private and demonstrations in public were not qualitatively different from those by which Pittard was describing Macleay.
- (119) Alfred Roberts (1822-1898), 19 December 1861, Owen Collection 22:3244/5.
- (120) Richard Owen to the Duke of Teck, 17 March 1886, quoted in Jessie Dobson, "Life and Achievements of Richard Owen", MS 1981, in General Library of the Natural History Museum, p 143.
- (121) See, for instance, F.D. Ommanney, A House in the Park, London.

Note: Unless otherwise stated 'Owen Collection' refers to the collection in The Natural History Museum, London.

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## A Catalogue of the Correspondence, Manuscripts and Drawings of Richard Owen, William Clift and Sir Everard Home contained within the Owen Collection at The Natural History Museum

John C. Thackray

One of the treasures of The Natural History Museum is the Owen Collection, housed in the Rare Book Room of the General Library. It comprises the correspondence and scientific manuscripts of Sir Richard Owen (1804–1892), William Clift (1775–1849), and Sir Everard Home (1756–1832) presented by Charles Davies Sherborn in 1908; books from Owen's library given by Miss Emily Owen in 1915, and sundry other items relating to Owen purchased or presented at later dates. Items in the collection bear the press mark OC followed by a number. A list of the collection in shelf mark order is given on

pages 173–176.

This catalogue includes details of all material in the Owen Collection, except for the following categories: unannotated books from Owen's library; offprints, and those bearing only a handwritten distribution list; photocopies of Owen letters in other libraries, and secondary works relating to Owen. Also detailed are a number of items which appear to have formed part of the Owen Collection at one time, but are now in the General Library Handwriting Collection (L.Handwriting Coll.), the General Library Manuscripts (L.Mss) and the Palaeontology Manuscripts (P.Mss). A brief account of Owen letters and papers in other manuscript collections held by the Department of Library Services, and in the Museum Archives, is also given.

## Sir Richard Owen

## CORRESPONDENCE

The correspondence listed below comes from the 27 bound volumes and 3 supplementary volumes that together make up OC62, with the addition of a few letters from other parts of the Owen Collection, the Handwriting Collection, and the General Library Manuscripts. Letters

inserted into Owen's annotated books are detailed on pages 150–155, and are listed in the index, but are not listed here. Letters which accompanied the diplomas and certificates in OC74 are not listed here.

Each entry contains the following information:

Name of writer (dates of birth & death if known), country of writing if not England. Number of letters with note of drawings etc, name of recipient if not Owen, date or date span. Volume and folio numbers.

Abbott, Charles Conrad, Falkland Islands. 1. 1859 Jun 12. 1/3-4

Abel, J. L. 2, 1867 Nov 1-4, 1/1-2,5.

Abraham, Phineas S (1844-1921), Ireland. 1. 1887 Dec 20. 1/7-8.

Abrahams, R T. 1 to Drewry Ottley, 1843 Oct 2. 1/5+-6.

Acton, Edward. 6, 1851 Aug - 1852 Apr. 1/9-18.

Acton, Sophia [widow of Edward]. 1, 1861 Jul 31. 1/19-20

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Wood, G W. 1, 1850 Sep 15. 27/145-146

Wood, Joseph. 1, 1850 Jan 22. 27/131

Wood, Searles Valentine (1798–1880). 4, 1848 Jul – 1863 Dec. 27/125–130

Wood, W (ca 1813-1878), Australia. 1, 1853 Nov 18. 27/143-144

Woodhouse, ?. 1 to William Buckland, 1841 Nov 15. 27/147

Woodward, Sir Arthur Smith (1864–1944). 1, 1886 Feb 6. 27/148–149

Woodward, Harry Page (1858-1917). 1, 1887 Sep 17. 27/211

Woodward, Henry (1832–1921). 24 with draft replies, 1879 Jul – 1888 Jun. 27/151- 195; OC59.1/254

Woodward, Samuel Pickworth (1821–1865). 7 with 1 reply, 1847 Aug – 1865 May and undated. 27/200–210; Suppl 3

Woon, William, New Zealand. 1 to T K Short, 1847 Oct 13. 27/212-213

Wormald, Thomas (1802–1873). 1, [1835 Feb]. 27/198–199

Wright, Edward Perceval (1834–1910), Ireland. 2, 1880 Sep - Nov. 27/214-215

Wright, Thomas (1809–1884). 11 with drawings by C Pierson, 1854 May – [1882]. 27/216–237

Wyatt, James. 1, 1863 Nov 9. 27/237a-238

Wyman, Jeffries (1814–1874), USA. 9 with sketches and draft reply, 1843 Apr – 1870 Aug. 27/ 238a-259

Yarrell, William (1784–1856). 5, 1836 Nov – 1851 Feb; 1 to the Chairman of the Publications Committee. 27/262–269

Yates, James (1789–1871). 6, 1840 Aug – 1841 Mar. 27/270–280

Yeats, John. 1, 1883 May 22. 27/282-283

Yorke, Charles Isaac (1801-1863). 1, 1860 May 7, 27/284

Youatt, William (1776–1847). 2, 1839 Jun – Sep. 27/285–287

Zaaver, Teunis (1837–1902), Netherlands. 1, 1874 Apr 30. 27/290

Zeitter, John C. 1 to William Buckland, 1833 Jan 7, 27/291

Zittel, Karl (1839-1904), Germany. 1, 1867 Nov 20. 27/293-294

Zuchold, E A, Germany. 2, 1850 Jan – Jun. 27/295–297

Owen letters to unknown recipients. Suppl 1/18-21, 24, 38a, 50a, 68, 69, 72, 97; Suppl 3

Letters from unidentified correspondents: 12/302; 13/174, 244; 18/370; 22/177; 26/23-24

### MANUSCRIPTS BY OWEN

The bulk of Owen's manuscripts are now bound in one volume, OC59.1, and three volumes, OC90.1–3. A few fragmentary items have been omitted from this catalogue.

Entries, which are in chronological order, are arranged as follows:

Date. Title.

Physical description. Nature of material. Shelf mark.

Notes.

1825. Dissection. (Notes on my first dissection)

6 leaves; 20 cms. Holograph. OC38.1(1)

The dissection, of a human cadaver, was made at St Bartholomew's Hospital, London.

[ca. 1830]. [On some young specimens of Pentelasmis from off Cape Horn]

2 leaves; 32 cms. Holograph. OC59.2/220-222

1831 Feb. [Report of dissection of Testudo Indica at the Zoological Society's rooms]

2 leaves; 31 cms. Holograph. OC90.3/14-15

[1831]. [Notes made while dissecting the pearly nautilus]

5 leaves; 33 cms. Holograph. OC33.1

Partly published in Owen, R, 1832. Memoir on the pearly nautilus, London.

[after 1831]. Notes and measurements of Echidna hystrix

1 leaf; 32 cms. Holograph. OC90.2/23

1832 [?Oct]. Mr Owen's report to the Board [of Trustees of the Royal College of Surgeons]

3 leaves; 31 cms. Holograph. OC90.1(1)/23–25

1832 Dec 17. Answers to Sir Anthony Carlisle's questions respecting the crowded state of the Museum

2 leaves; 31 cms. Holograph. OC90.1(1)/21-22

[1832]. Memoir on the pearly nautilus

47 leaves; 33cms and smaller. Holograph. OC33.1

Published in Owen, R, 1832. Memoir on the pearly nautilus, London.

Two versions of rough corrected draft.

[1832]. Memoir on the pearly nautilus

14 leaves; 32 cms and smaller. Partly holograph. OC33.1

Published in Owen, R, 1832. Memoir on the pearly nautilus, London

The final fair copy, incomplete.

[after 1832]. [The Museum of the Royal College of Surgeons]

6 leaves; 31 cms. Holograph. OC90.1(1)/15-20

An account of the eleven series of specimens that made up the museum.

1833 Apr. [Notes on dissections of emus' eggs] 3 leaves; 31 cms. Holograph. OC90.3/16-18

1833 May. Ms of anat[omy] of Placuna Placenta with drawing of foot 6 leaves and 1 art original; 31 cms and smaller. Holograph. OC78

[1834]. Description of a recent Clavagella

11 leaves; 32 cms. Holograph. OC90.2/63-72

Published in 1834, Proceedings of the Zoological Society of London, 1834: 111-112.

[after 1834]. [On the mammary glands of Ornithorhynchus]

8 leaves; 32 cms. Holograph. OC90.3/256–263

[?1835]. Argonauta rufa

4 leaves and 2 art originals; 32 cms and smaller. Holograph. OC59.1/6-11

The specimens were collected by Captain P. P. King off the coast of South America, and are cited in Owen, R., 1836. Description of some new or rare Cephalopoda, collected by Mr George Bennett, *Proceedings of the Zoological Society of London*, 1836: 19–24.

[after 1835]. Royal College of Surgeons. Outline of a plan of arrangement of the collection 2 leaves; 31cms. Holograph. OC90.1/1-2

Gives notes on the contents of the large and small museums.

[?1836] Report to the President on the establishment for the new Museum [of the Royal College of Surgeons]

11 leaves; 25cms. Holograph. 90.1/3–13

[after 1836]. Unorganised and organised matter 79 leaves; 25 cms. Holograph. OC90.3/73–151

[after 1837]. On the cement [of teeth]

6 leaves; 31 cms. Holograph. OC90.2/73-78

[1838]. Catalogue of Crustacea collected by Lieut Belcher and Geo. Tradescant Lay Esq. 27 leaves; 33 cms. Holograph. OC59.1/21-47

See Owen, R, 1839. Crustacea in The Zoology of Captain Beechey's voyage, London.

[ca. 1838]. [Rough notes on Crustacea collected on Capt. Beechey's voyage to the Pacific] 8 leaves; 33 cms. Holograph. OC59.1/13–20

[after 1838]. Descriptions of some fragments of a large species of sauroid fish from the New Red Sandstone (Keuper) of Coten End, Warwickshire

7 leaves; 32 cms. Holograph. OC90.3/205-211

See Owen, R,1841. Description of . . . the genus Labyrinthodon from the New Red Sandstone of Coton End . . . . Proceedings of the Geological Society of London, 3: 389–397.

[after 1839]. [Notes on the fragment of Moa bone given to Owen in 1839]

3 leaves; 25 cms and smaller. Holograph. OC90.2/6-8

See the note: Exhibition of a bone of an unknown struthious bird from New Zealand. *Proceedings of the Zoological Society of London*, 1840: 169–171.

[183–]. [Report to the Board of Curators of the Royal College of Surgeons]

1 leaf; 30cms. Holograph. OC90.1(1)/26 On the need for cases in the large museum.

[183–]. [Cephalopod dissections]

2 leaves; 20 cms. Art originals in pencil. *in* Blainville, H M D de, 1837. *Lettre . . . sur le poulpe de l'argonaute*. Mollusca Library, 35A o B.

1840 Dec 30. [Report on progress with Volume 5 of the Catalogue of Physiological Specimens at the Royal College of Surgeons]

1 leaf; 32 cms. Holograph. OC90.3/19

1841 March. Report [to the Museum Committee] on completion of the Physiological Catalogue of the Hunterian Collection

3 leaves; 25 cms. Holograph. OC62.21/20-22

[ca. 1842]. [On the skeleton of the rhynchosaur] 8 leaves; 32 cms. Holograph. OC90.2/136–143

Published in Owen, R, 1842. On the Rhynchosaurus Transactions of the Cambridge Philosophical Society, 7: 136–143

[after 1842 Jan]. *Professor Owen's statement to the Council [of the Royal College of Surgeons]* 2 leaves; 32 cms. Holograph. OC90.1(1)/32–33 Relates to Owen's efficiency as Conservator.

1842 Aug 13. [Letter concerning a priority dispute with M. de Serres on the development of teeth] 3 leaves; 25 cms. Holograph. OC90.2/196–198

[after 1842]. [On the origins of vertebrae and ribs] 4 leaves; 32 cms. Holograph. OC90.2/47–50

[after 1844]. [On the skeleton of the plesiosaur] 10 leaves; 32 cms. Holograph. OC90.2/144–152

[after 1844]. [On the origin of the bones of the skull] 3 leaves; 32 cms. Holograph. OC90.2/44-46

[after 1845]. [Details of a dispute with Alexander Nasmyth over fossil teeth from Chatham] 4 leaves; 31 cms. Holograph. OC90.2/192–195

[?184]. [The place and purpose of the Museum of the Royal College of Surgeons] 2 leaves; 31 cms. Holograph. OC90.1(1)/30–31

[?184-]. [Questions on the relations between light and health]

6 leaves; 24 cms. Holograph. OC90.1(3)/22-27

Probably related to Owen's work with the Metropolitan Sanitary Commission, 1847–1848

[?184-]. [Draft letter on health and poverty in London]

2 leaves; 32 cms. Holograph. OC90.1(3)/20-21

Probably related to Owen's work with the Metropolitan Sanitary Commission, 1847-1848

[after 1850]. Extract from the Report of the Commission of Inquiry into the British Museum, 1850 . . . 2 leaves; 23 cms. Ms (transcript) [?by Richard Owen]. OC90.1(4)/1-2

Relates to the essential unity of the British Museum

[after 1850]. [Draft letter on Sir Robert Peel's relations with science and scientific men] 3 leaves; 33 cms. Holograph. OC90.1(3)/17–19

This appears to be a contribution to an obituary of Peel.

1855. [Speech given at the Anniversary Dinner of the Royal Society of Arts]

13 leaves; 25 cms. Holograph. OC90.1(2)/22-33a

A rough draft. The speech was delivered on 3 July 1855, and is published in *Journal of the Royal Society of Arts* 3: 584–589.

1855. Speech returning thanks for the toast of the scientific societies of the British Isles at the 'Anniversary Dinner' of the R[oyal] Soc[iety] of Arts, held in the Christal Palace.

4 leaves; 25 cms. Ms with holograph corrections. OC90.1(2)/18-21

Corrected copy of the draft at ff22-33a

[after 1855]. [Notes on Plesiosaurus Zetlandicus from Lofthouse, near Redcar] 4 leaves; 33 cms. Holograph. OC90.2/19-22

[1858]. On a new genus and species of Pterodactyl 4 leaves: 32 cms. Holograph. OC90.3/242-245

Published as Owen, R, 1859. On a new genus (Dimorphodon) of Pterodactyle . . . Report of the British Association for the Advancement of Science for 1859. 97–99. The manuscript is incomplete.

1859 Jan 26. *Idea of a Museum of Natural History* 1 leaf; 30 cms. Holograph. Historical Collection.

This is Owen's first sketch plan for the new Natural History Museum.

[1859]. Sketch of farewell address as President of British Association at Aberdeen . . . 1 leaf; 33 cms. Holograph. OC90.1(2)/34

[after 1859]. [A description of the fossil reptile Lycosaurus] 7 leaves; 32 cms. OC90.3/249-255

[after 1859]. On spontaneous generation 2 leaves; 32 cms. Holograph. OC90.3/30–33

[after 1859]. On spontaneous generation]
23 leaves; 23 cms. Holograph. OC90.2/106–128

[1860]. Species

14 leaves; 33 cms and smaller. Holograph. OC59.1/48-61

Published in 1860, Longman's dictionary of scientific terms, London.

1860–1878; 1884. [Draft annual reports of the Superintendent of the natural history departments to the Trustees of the British Museum]

33 leaves; 32 cms and smaller. OC59.1/239-247 and OC90.1(4)/3, 5-26, 35

All these reports are published in the Accounts of income and expenditure of the British Museum...

[1860–1880]. Collection of notes and draft memoranda on the British Museum (Natural History), its buildings, fixtures, fittings and collections]

15 leaves; 32 cms and smaller. Holograph. OC90.1(4)/74-88

1860. Original sketches of proposed new museum

10 leaves; 32 cms and smaller. Holograph. OC90.1(4)/64-73

[1862]. On the feathered fossil (Griphornis longicaudatus, Ow.) from the lithographic stone of Solenhofen

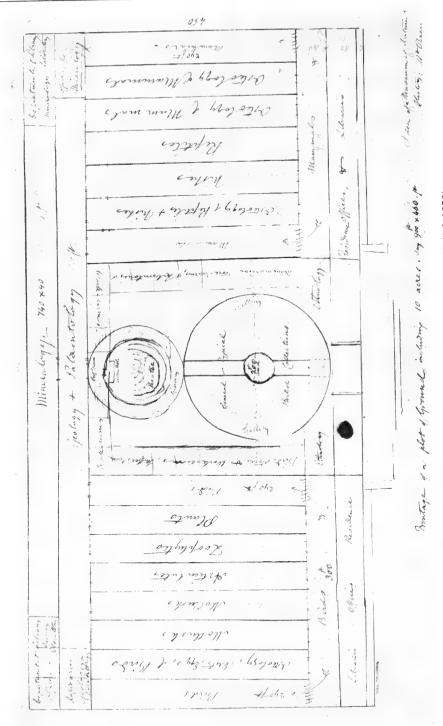
3 leaves; 25 cms. Holograph. OC90.3/246-248

Incomplete. Apparently part of a lecture delivered at the 1862 meeting of the British Association, in Cambridge.

[after 1862]. [On the] caudal vertebra of Ramphorynchus 3 leaves; 33 leaves. Holograph. OC90.2/16–18

[1863]. On some instances of the power of God as manifested in his Animal Creation 36 leaves; 32 cms. Holograph. OC59.1/63–98

This is the text of a lecture given to the Young Men's Christian Association on 17 November 1863, and published separately the following year.



Idea of a Museum of Natural History, 26 January 1859 (1.2 1859).

1863 Dec. Memorandum of expenses of journey from Alnwick to Sandside Bay, Caithness . . .

1 leaf; 33 cms. Holograph. OC90.1(4)/4

Owen travelled to Scotland to collect the skeleton of a whale for display in the Museum

[ca. 1864]. [On plesiosaurs from the Liassic rocks of Whitby]

10 leaves; 32 cms. Holograph. OC90.3/20-29

Published in Owen, R., 1865. Monograph of the fossil Reptilia of the Liasic Formations, part 1, Palaeontographical Society. Pp. 12–13.

[ca. 1865]. Description of part of the skeleton of a flightless bird indicative of a new genus and species (Cnemiornis calcitrans, Ow.)

22 leaves: 33 cms. Holograph, OC90.3/152-173

Published in 1866, Transactions of the Zoological Society, 5: 395-404

[1865]. On zoological names of parts and homological interpretations of their varieties and beginnings...

16 leaves; 32 cms. Holograph. OC90

Published in 1865, *Proceedings of the Royal Society*, 14: 129–133. This paper was a response to one by W H Flower, who himself replied in print. Two versions are present in this manuscript.

[1866]. Report to the Trustees [of the British Museum] (rough draft) on the 'Cummingian Collection of shells

13 leaves, 32 cms and smaller. Holograph. OC90.1(4)/37-49

1866. [Notes on Dinornis and on an extinct bird of prey from New Zealand] 4 leaves; 32 cms. Holograph. OC90.3/174–177

1866. On the anatomy of vertebrates

19 leaves; 23 cms. Holograph. OC90.3/35-53

Titlepage and preface to volume 1 of the book published in 1866.

[1867]. [Review of 'Reign of Law' by the Duke of Argyll, and other books]

52 leaves; 33 cms. Holograph. OC59.1/100-151

Published in Quarterly Review, 1867

[186–]. On the need for a chemical laborartory in the Mineralogy Department]

1 leaf; 33 cms. Holograph. OC90.1(3)/39

1874 Sep. [Notes on ancient Egyptian and Jewish history and language]

11 leaves; 33 cms. Holograph. OC90.3/54-64

[1875]. [Review of The] Last Journals of David Livingstone

36 leaves; 27 cms. Holograph. OC59.1/153-188

Published in 1875, Quarterly Review, 138: 498-528

[after 1878]. [On the origin of species]

12 leaves; 32 cms. Holograph. OC90.3/179-190

1879. Plan of proposed Index Museum

1 leaf; 50cms. Ms with holograph annotation. Historical Collection

[1879]. On the British Museum of Natural Hist[ory], Cromwell Road 34 leaves; 32 cms and smaller. Mostly holograph. OC59.1/190–223

A history of the separation of the natural history departments from the British Museum.

[1879]. Monograph on the fossil Reptilia of the London Clay, supplement No. 2 to the order Chelonia 10 leaves; 32 cms. Holograph. OC90.3/195–204

Published by the Palaeontographical Society, 1880.

[after 1879]. On the skull of the crocodile]

2 leaves; 33 cms. Holograph. OC90.3/191–192

Incomplete.

[187–]. Memorandum on the acquisition of space in the departments of Geology and Mineralogy 1 leaf; 32 cms. Holograph. OC90.1(4)/36

1880 Apr 22. [Draft memorandum on meteorites to the Trustees of the British Museum] 3 leaves; 33 cms. Holograph. L. Handwriting Coll. OWE

[1880]. Description of some remains of a gigantic land-lizard (Megalania prisca, Owen) from Australia (Part II)

9 leaves; 33 cms. Holograph. OC90.3/264-272

Published in 1881, Philosophical Transactions of the Royal Society, 171: 1037–1050

[1881]. [On the British Museum (Natural History)]

1 leaf: 33 cms. Holograph. OC59.1/228

Opening address to Section D of the British Association for the Advancement of Science, published in *Nature*, *London*, 24: 421–425.

[ca. 1882]. [A description of the skeleton of Dinornis parvus]

38 leaves; 32 cms. Holograph. OC90.2/154-191

Published in 1883, *Transactions of the Zoological Society of London*, 11: 233–256 Missing the first two leaves.

[ca. 1882]. On generic characters in the order Sauropterygia

6 leaves; 32 cms. Holograph. OC90.1/9-14

Published in 1883, Quarterly Journal of the Geological Society of London, 39: 133-138

[after 1882]. [On William Smith's debt to Cuvier and Brongniart]

30 leaves, 23 cms. ?Holograph. OC90.3/212-241

Apparently an Owen holograph, even though he is mentioned in the third person.

1883. Capture of a whale

7 leaves; 26 cms. Holograph. OC59.1/230-237

Concerns the whale eventually set up in the Central Hall of the British Museum (Natural History).

1884. Guidebook to the proposed type-museum . . . of the British Museum of Natural History, Cromwell Road

96 leaves; 32 cms and smaller. Holograph. OC59.1/249-344

1886. [On two species of Megalanian genus (Meiolania) from Lord Howe's Island]

8 leaves; 32 cms and smaller. Holograph. OC90.3/65-72

Published in 1887, Philosophical Transactions of the Royal Society of London, 178: 471-480

[188–]. [A collection of notes on the Index Museum]

8 leaves; 32 cms and smaller. Holograph. OC90.1(4)/29-34

[18—]. [Notes concerning] Kostlin on Lepidosiren

5 leaves; 31 cms. Holograph. OC90.2/1-5

[18—]. [Notes on the] salivary gland, Ornithorhynchus

1 leaf; 32 cms. Holograph. OC90.2/15

[18—]. [On the reproductive organs of the rhinoceros]

7 leaves; 32 cms. Holograph. OC90.2/129-135

[18—]. [Notes on brachiopods]

4 leaves; 33 cms. Holograph. OC90

[18—]. Generation [in] Radiaria]

4 leaves; 33 cms. Holograph. OC90.2/59-62

[18—]. [Notes on] circulation in Amphibia from Meckel [Beitrage zur] Vergl[eichenden] Anat[omie] 2 leaves; 32 cms. Holograph. OC90.2/24–25

[18—]. [Oyster shells]

1 art original, pencil; 27 cms. ?Holograph. OC90.1(3)/1

[18—]. Heads for a lecture

1 leaf; 23 cms. Holograph. OC90.1(2)/17

Compares museums in Edinburgh and London

### OTHER MANUSCRIPTS HELD BY OWEN

Anning, Mary

[after 1829]. [Account of a visit to London» 2 leaves; 23 cms. Holograph. OC62.1/153–154

As above.

[Anning, Mary]

[184-]. [Poem in honour of R. I. Murchison] 2 leaves; 23 cms. ?Holograph. OC62.1/151-152

Part of a collection sent by A. Anning to Lord Enniskillen in 1885, and by him to Owen.

[Anning, Mary]

[On the differences between recent and fossil species] 2 leaves; 23 cms. Holograph. OC62.1/149c-150 As above.

Backhouse, Mrs

?1839. On one piece of Fucus brought up from off the rocks at Frebah, Cornwall 2 leaves; 24 cms. Holograph. OC62.1/5

Barry, Martin

1854 Sep. Keber's discovery of the penetration of the spermatozoan into the ovum of the freshwater mussel confirmed in two quarters

12 leaves; 31 cms. ?Holograph. OC59.2/1-12

Published in 1855, Edinburgh Monthly Journal of Medicine and Science, 20. See letters from Barry to Owen in OC62.

Belfour, Edmund

[18—]. Standing rule relating to the Office of Conservator of the Museum of the Royal College of Surgeons of England

2 leaves; 31 cms. Holograph. OC90.1(1)/27-28

Blackwall, John

[?1843]. Report on the structure and uses of the palpi of the Araneidea 6 leaves; 25 cms. Holograph, annotated by Owen. L Mss BLA

Blake, Charles Carter

1861 Oct. Statement respecting deathwound of gorilla 3 leaves; 25 cms. Holograph. OC62.10/178–180

The specimen was collected by Du Chaillu and exhibited in the British Museum.

Blake, Charles Carter

1858 Feb. A nomenclator of Bovidae

6 leaves; 26 cms. Holograph. OC59.2/13-18

Intended as an appendix to J. E. Gray's List of Mammalia, 1843.

Blake, Charles Carter

1858 Apr. A few hasty observations on the classification of the genus Auchenia, Illiger 6 leaves; 26 cms. Holograph. OC59.2/19–24

A reply to the paper read before the Linnean Society by W. Bollaert, on 17 April 1832.

British Museum

1824 May 1. State of the rooms of the Department of Natural History

British Museum

1881 Feb 26. [Resolution of a meeting of the Standing Committee of the Board of Trustees, signed by E. A. Bond]

2 leaves: 32 cms. Ms. OC90.1(4)/27-28

Concerning the hours of service of certain attendants

British Museum

1765 Jul 9. [Document of appointment of Daniel Solander as Assistant]

1 leaf: 37 cms. Ms. OC76

British Museum

[18—]. [On the qualifications necessary for the Superintendent of the natural history departments] 3 leaves; 31 cms. Ms. OC90.1(4)/50–51

Cuvier, Baron Georges

[after 1816]. [Pencil sketches of teeth and bones]

6 art originals, 32 cms and smaller. Holograph. OC59.2/42-47

Given to Owen by Frank Buckland in 1856.

Evsenhardt, Carl Wilhelm

1830 Mar. De structura renum observ. microscopia, 1818

1 leaf: 32 cms. Ms. OC90.3/1

Gibson, A.

1861 Jul. Plan for a free museum for the people [with a letter of transmittal]

2 leaves; 32 cms. Holograph. OC90.1(4)/52-53

Handel, George Frederick, and others

[before 1835]. [Twenty one pieces of instrumental and vocal music]

ca. 60 leaves; 11 cms. Ms (transcript) by Caroline Amelia Clift (Mrs Richard Owen). OC84.2

Annotated by Owen on the front cover 'Dear Caroline's book'.

Hunter, John

[?ca. 1830]. [On muscular motion]

6 leaves; 32 cms. Ms transcript or translation by Owen. OC90.1(2)/1-6

Part of Hunter's first Croonian Lecture, read to the Royal Society in 1776. See Palmer, J. F. (Ed.), 1837. The works of John Hunter with notes, 4: 195–200.

[Hunter, John]

[?ca. 1830]. On motion in vegetables

4 leaves; 32 cms. Ms transcript or translation by Owen. OC90.2/26-29

Part of Hunter's first Croonian Lecture on muscular motion, read to the Royal Society in 1776. See Palmer, J. F., op. cit., 4: 204–207.

[Hunter, John]

[after 1831]. Muscular contraction

8 leaves; 31 cms. Ms transcript by Owen. OC90.2/51-58

Part of Hunter's first Croonian Lecture, 1776.

[Hunter, John]

[after 1831]. [On the composition and growth of bones]

10 leaves; 32 cms. Ms transcript by Owen. OC90.1(2)/7-16

These notes are cited by Everard Home, see Palmer, J. F., op. cit., 4:315–318.

[Hunter, John].

[?ca. 1830]. Introduction to natural history rendered into English

14 leaves; 32 cms. Ms translation by Owen. OC90.2/30-43

Iones, Joseph

1870 Aug. Outline of the explorations of the monumental, religious, warlike and mechanical remains of the stone grave and mound building race of Tennessee, USA.

51 leaves and 23 photographs; 25 cms. Holograph. OC59.2/91-164

Published in 1876, Smithsonian Contributions to Knowledge, 33.

Kaup, Johann Jacob

[1832]. On the arrangement of the Mammalia

14 leaves; 21 cms. Holograph. OC59.2/165-178

Apparently purchased by C. D. Sherborn from Dulau.

McCormick, Robert

[185–]. Plan of search for the Franklin Expedition

4 leaves; 33 cms. Holograph. OC62.18/247-250

Macdonald, John Dennis

1854 Jan. Observations on the anatomy of several of the structures of the Nautilus Pompilus, with some account of the habits of the animal

11 leaves; 30 cms. Holograph. OC62.18/273-283

Nesti, Filippe

[18—]. A fossilised mammalian skull]

1 art original; 27 cms. Holograph. OC62.20/190

Pollock, Charles E.

1860 Apr. [On certain mortgages held by the late John Brown of Stanway]

2 leaves; 32 cms. Ms transcript. OC62.21/397-398

Reichenbach, Heinrich G. L.

[18—]. Preface to Das Leben der Thiere by F. Wegener]

3 leaves; 34 cms. Holograph. OC62.22/230

Reichert, ?Carl Bogislaus

[after 1836]. Branchial arches of chick, mammif[er], and larva of toad

10 leaves; 31 cms. Ms translation by Owen. OC59.2/195-204

From Reichert's dissertation De embryonum arcubus sic dictis branchialibus (1836).

Salter, James William

[ca. 1864]. Chart of fossil Crustacea [Palaeozoic portion]

1 art original; 41 cms. Holograph. OC59.2/205

Published by Salter, J. W. and Woodward, H., 1865. Chart of the genera of fossil Crustacea. London

Scharf, George, and others

1841–1842. [Receipts and accounts for lithographs prepared for Owen]

9 leaves; 25 cms and smaller. Holograph. OC90.1(3)/30-38

Scouler, John

[after 1821]. Remarks on some little known intestinal worms

4 leaves; 23 cms. Holograph. OC59.2/216-219

White, W.

[18—]. [On the nomenclature of natural history]

2 leaves; 41 cms. Ms transcript by Owen. OC90.1(3)/27-28

### LECTURE NOTES

Owen's lecture notes are bound in three volumes, OC38. Most are the rough notes from which he prepared his script, but a number of fair copies by William Clift, annotated by Owen, are

also present. Art prints and cuttings are inserted here and there, but not noted here. Newspaper reports of Owen's lectures are also inserted, and not listed. The 1837 lectures have been published in Sloan, P. R. (Ed.), 1992. The 1837 Hunterian Lectures in Comparative Anatomy at the Royal College of Surgeons. Oxford University Press.

### 1828 St Bartholomew's Hospital

Apr 17. Lecture 1. Vocal apparatus, brain, etc. OC38.1/1-9

Apr 19. Lecture 12. Development of the brain. OC38.1/10

### 1837 Hunterian Lectures

May 2. Lecture 1. Introductory. OC38.1/13–30

May 4. Lecture 2. Historical. OC38.1/31–90.

[May 11] Lecture 5. Organised beings, nature and characters of. OC38.1/146-203

May 13. Lecture 6. Plants and animals, distinguishing characters of. OC38.1/92–144. Lecture 7. Organisation of animals; blood. OC38.1/204–260

## ?1838

Lecture 2. Radiata. OC38.1/261-267

Lecture 3. Articulata etc. OC38.1/268-282

May 17. Lecture. OC38.1/283-284

May Lecture 4. Mollusca. OC38.1/285–290

Lecture 7. Digestive organs of birds. OC38.1/292-300

Lecture 8. Mammalia. OC38.1/301-306

### 1839 Hunterian Lectures

Apr Lecture 1. Introductory. OC38.1/310–321

May 2. Lecture 2. General, on secretion. OC38.1/322–330

May 4. Lecture 3. Kidneys. OC38.1/331–337

May 7. Lecture 4. Kidneys. OC38.1/338–351

May 9. Lecture 5. Secretions. OC38.1/353–354

May 11. Lecture 6. Bladders. OC38.1/355

May 14. Lecture 7. Skin. OC38.1/356

May 16. Lecture 8. Skin. OC38.1/357

May 18. Lecture 9. Skin. OC38.1/358

May 21. Lecture 10. Skin. OC38.1/359–360
May 23. Lecture 11. Skin and bair. OC38.1/361

May 23. Lecture 11. Skin and hair. OC38.1/361–366 Jun 8. Lecture 18. Peculiarities. OC38.1/367

Jun 11. Lecture 19. OC38.1/368

Iun 13. Lecture 20. OC38.1/368

Jun 15. Lecture 21. Luminosity. OC38.1/369

### 1840 Hunterian Lectures.

Prospectus of lectures. OC38.1/371-372

Apr 21. Lecture 1. Theories of generation. OC38.1/373–384 Lecture 2. Spontaneous generation. OC38.1/385–397

Apr 25. Lecture 3. Classification of animals. OC38.1/401–402

May 26. Lecture 16. Female reproductive organs. OC38.2/280

### 1841 Hunterian Lectures

Mar 31. Lecture 1. Introductory. OC38.1/403-410

Apr 1. Lecture 2. Bones. OC38.1/411

#### 1842 Hunterian Lectures.

Outline of course of lectures. OC38.1/309

Apr 5. Lecture 1. Nervous system. OC38.2/1–62 Lecture 2. Nervous system. OC38.2/63–69 Lecture 3. Nervous system. OC38.2/70

Lecture 5. Nervous system, OC38.2/71–74 Apr 16. Lecture 6. Nerves of insects. OC38,2/75-82 Apr 30. Lecture 12. Brain of birds, OC38,2/160-164 May 3. Lecture 13. Spinal chord of birds. OC38.2/83-107 May 17. Lecture 19. Nervous system. OC38.2/108 May 21. Lecture 21. Nervous system. OC38.2/109 Lecture 22. Nervous system. OC38.2/110-135 May 24. 1844 Hunterian Lectures Mar 14. Lecture 1. Introductory. OC38.2/136-152 Apr 9. Lecture 10. Reproductive organs in fish. OC38.2/272-279 Lecture 11. Osteology of birds. OC38.2/163-160 Apr 12. Lecture 13. Brain of birds. OC38.2/165-178 Apr 15. Apr 18. Lecture 14. Digestive organs of birds. OC38.2/180–189 Lecture 15. Circulation and reproduction in birds. OC38.2/191–197 Lecture 16. Skin of birds. OC38.2/198 Apr 23. Apr 25. Lecture 17. Craniology of Mammalia. OC38,2/199-210 Apr 27. Lecture 18. Craniology of Mammalia. OC38.2/211-245 Lecture 20. Nervous system of Mammalia. OC38.2/246-254 May 2. Lecture 21. Development of teeth, OC38.2/255–256 May 7. Lecture 22. Digestive system of Mammalia. OC38.2/257-265 Lecture 23. Digestive system of Mammalia. OC38.2/266-270 May 9. 1848 Hunterian Lectures Synopsis of the Hunterian Lectures . . . [printed] OC38.2/282 Synopsis of lectures. OC38.2/283-297 Mar 14. Lecture 1. Orders of birds. OC38.2/298-339 Mar 16. Lecture 2. Skeleton of birds, OC38,2/340-352 Mar 21. Lecture 4. Muscles of birds. OC38.2/353-362 Mar 24. Lecture 5. Neurology of birds. OC38.2/363-369 Lecture 6. Digestive system of birds. OC38.2/370-382 Mar 28. Lecture 7. Blood and lymphatic systems of birds. OC38.2/383–384 Mar 30. Lecture 8. Dermal systems. OC38.2/385 Apr 4. Lecture 10. Characters of mammals, OC38.2/386-390 Apr 6. Lecture 11. Monotremes. OC38.2/391-404 Lecture 12. Marsupalia. OC38.2/405 Apr 8. Lecture 14. Cetacea. OC38.2/406 Lecture 15. Ungulata. OC38.2/407-409 Apr 15. Lecture 16. Ungulata. OC38.2/410-416 Lecture 17. Ungulata. OC38.2/417 Lecture 18. Edentata. OC38.2/418 Apr 25. Lecture 19. Rodentia, OC38.2/419-420 Lecture 20. Insectivora. OC38.2/421-426 Apr 27. Apr 29. Lecture 21. Cheiroptera. OC38.2/427-428 Lecture 22. Carnivora. OC38.2/429-433 May 2. May 4. Lecture 23. Quadrumana. OC38.2/434-441 1849 Hunterian Lectures Synopsis of the Hunterian Lecture . . . Printed). OC38.3/1 Mar 13. Lecture 1. Generation. OC38.3/2

Lecture 2. Generation. OC38.3/3 Lecture 4. Generation of polypi. OC38.3/4–10 Lecture 6. Generation of Echinoderma. OC38.3/11-21

Lecture 8. Generation in Entozoa. OC38.3/22 Mar 29.

Apr 7. Lecture 12. Generation in Crustacea. OC38.3/23–28

- Apr 10. Lecture 13. Generation in Crustacea. OC38.3/29
- Apr 14. Lecture 15. Generation in Insecta. OC38.3/31–35 Lecture 16. Generation in Insecta. OC38.3/36
- Apr 19. Lecture 17. Generation in Insecta. OC38.3/37-42
- Apr 21. Lecture 18. Generation in Arachnida. OC38.3/43–45
- Apr 26. Lecture 20. Generation in Encephalata. OC38.3/46–50
- May 1. Lecture 22. Generation in Cephalopoda. OC38.3/51–59 Lecture 23. Generation in Cephalopoda. OC38.3/60.

### 1850 Hunterian Lectures.

Synopsis of the Hunterian Lectures (printed copies). OC38.3/60–81

- Mar 14. Lecture 2. Generation in fishes. OC38.3/82–93 Lecture 4. Generation in reptiles. OC38.3/94–109
- Mar 26. Lecture 7. Generation in birds. OC38.3/110–120
  Lecture 8. Generation in birds. OC38.3/121–130
  Lecture 13. Generation in Rodentia. OC38.3/158–164
  Lecture 14. Generation in Rodentia. OC38.3/165

### 1851 Hunterian Lectures

Synopsis of the Hunterian Lectures (printed). OC38.3/131

Mar 4. Lecture 1. Introductory. OC38.3/131–154 Lecture 14. Osteology of Marsupalia. OC38.3/155–157

# 1852 Hunterian Lectures.

Synopsis of the Hunterian Lectures (printed). OC38.3/166

# 1853 Hunterian Lectures.

Synopsis of the Hunterian Lectures (printed). OC38.3/167 Mar 22. Lecture 1. General characters. OC38.3/168–176 Lecture 2. Fishes. OC38.3/177–204

### 1854 Hunterian Lectures.

Synopsis of the Hunterian Lectures (printed). OC38.3/170

#### 1855 Hunterian Lectures.

Synopsis of the Hunterian Lectures (printed). OC38.3/272 Mar 6. Lecture 1. Introductory. OC38.3/273–278

# 1857 Museum of Practical Geology.

Synopsis of a course of lectures [delivered at the Museum of Practical Geology] (printed). OC38.3/279

# 1858 Museum of Practical Geology.

Addresses to working men (printed). OC38.3/280

Synopsis of a course of lectures [delivered at the Museum of Practical Geology]. (printed). OC38.3/281

# 1859 Royal Institution and elsewhere.

Syllabus of a course of twelve lectures [delivered at the Royal Institution] (printed). OC38.3/283 Synopsis of a course of lectures [delivered at the Museum of Practical Geology] (printed). OC38.3/282

## 1861 Royal Institution and elsewhere.

Syllabus of a course of six lectures [delivered at the Royal Institution] (printed). OC38.3/283 Synopsis of a course of six lectures [delivered at the Museum of Practical Geology] (printed). OC38.3/284

1862 London Institution.

Syllabus of a course of four lectures [delivered at the London Institution] (printed). OC38.3/285

May 21. Lecture 3. Plumage of birds. OC38.3/286-301

May 28. Lecture 5. Distribution of birds. OC38.3/302-327

May 30. Lecture 6. Palaeontology of birds. OC38.3/328-331

### Undated Hunterian Lectures

[wmk 1835] May 26. Lecture 6. Digestive organs of reptiles. OC38.3/237-249

[wmk 1843] Lecture -. Unity of organisation of reptiles. OC38.3/250-269

[wmk 1846] Lecture 7. Teleology of skeleton of fish. OC38.3/205-236

### DRAWINGS

Owen's collection of 3500 drawings, paintings, prints and photographs has been described and listed in detail by Jean M. Ingles and Frederick C. Sawyer in 'A catalogue of the Richard Owen collection of palaeontological and zoological drawings in the British Museum (Natural History)' Bulletin of the British Museum (Natural History) Historical Series 6(5): 109–197.

Twenty three supplementary items, too large for the main sequence, can now be added to

that catalogue:

- 1. Elephantine Moa (Dinornis elephantopus, Owen). Photograph by Roger Fenton, 1858.
- 2. Cetiosaurus [reptilian limb bone] from Rosswell Pits near Ely, in the Mus. at Ely, Martin Fisher Esq.. Pen and ink drawing.
- 3. Palatal view [of skull of *Dicynodon tigriceps*] Jos. Dinkel del. Watercolour painting with pencil sketch on reverse.
- 4. [Side view of skull of *D. tigriceps*] Jos. Dinkel del. Watercolour painting.
- 5. Dicynodon tigriceps (Owen). Oblique view of forehead. Jos. Dinkel del. Watercolour painting.
- 6. [Three fragmentary bones, perhaps of Dicynodon, by ?Dinkel]. Watercolour
- 7. Occipital view [of Dicynodon tigriceps]. Jos. Dinkel del. Watercolour painting.
- 8. [Lower jaw of *Megatherium*] Jos. Dinkel del. Watercolour painting, published in Owen, R., 1860. *Memoir on the* Megatherium, or giant ground sloth of America. London. Plate 14.
- 9. Diprotodon australis. Lithograph.
- 10. Megatherium Americanum, Blumenb. Jos. Dinkel del. Watercolour painting, published in Owen 1860, op. cit. plate 1.
- 11. [Rear view of *Megatherium* skull] Jos. Dinkel del. Watercolour painting, published in Owen 1860, *op. cit.* plate 14.
- 12. [Front view of Megatherium skull] Jos. Dinkel del. Watercolour painting.
- 13. Skeleton of Mylodon robustus. Lithograph from Owen, R., 1842. Description of the skeleton of an extinct giant sloth. Royal College of Surgeons, London. Plate 1.
- 14. [Lower jaw of *Megatherium*] Jos. Dinkel del. Watercolour painting published in Owen 1860, op. cit., plate 14.
- 15. [Left side of skull of *Megatherium*] Jos. Dinkel del. Watercolour painting published in Owen 1860, op. cit. plate 12.
- 16. [Right side of skull of *Megatherium*] Jos. Dinkel del. Watercolour painting published in Owen 1860, op. cit. plate 13.
- 17. Megatherium [lower jaw]. Jos. Dinkel del. Watercolour painting.
- 18. Skull Diprotodon front view. [R. Owen]. Watercolour painting.
- 19. Skull Diprotodon Nat. size. [R. Owen]. Watercolour painting.



Watercolour painting of Megatherium Americanum by Joseph Dinkel. Published by Owen in his Memoirs on the Megatherium, 1860, plate 1 (1.5 item 10).

- 20. Skull Diprotodon Nat. size. R. Owen. Watercolour painting.
- 21. Skull Diprotodon Nat. size. [R. Owen]. Watercolour painting.
- 22. [Pelvis of Diprotodon by R. Owen]. Watercolour painting.
- 23. Pelvis Diprotodon back Nat. size. [R. Owen]. Watercolour painting.

### NOTEBOOKS, DIARIES AND SCRAPBOOKS

1830 Oct - Dec. Notebook

94 leaves; 10 cms. Holograph. OC25.1

Notes of dissections and other anatomical observations.

1831 Jan - 1832 Nov. Notebook

94 leaves; 10 cms. Holograph. OC25.2

Notes of dissections and other anatomical observations

1831 May. Notebook

94 leaves; 10 cms. Holograph. OC25.3

Zoological and anatomical observations, including observations at London Zoo, 15 May 1831 (ff.33–39).

1831 Jul - Oct. Notebook

94 leaves: 10 cms. Holograph. OC25.4

Notes of dissections and other anatomical observations, including observations at Guy's Museum (f.57)

1831 Jul – Aug. *Notebook and diary* 94 leaves; 10 cms. Holograph. OC25.5

Notes of lectures and museum displays made while in Paris

1831 Nov - 1832 Jan. Notebook

93 leaves; 10 cms. Holograph. OC25.6

Notes of dissections and other anatomical observations, with reading notes

1832 Jan - May: Notebook

94 leaves; 10 cms. Holograph. OC25.7

Notes of dissections and other anatomical observations

1832 Apr – 1833 Feb. *Notebook* 

92 leaves: 10 cms. Holograph. OC25.8

Notes of dissections and other anatomical observations

1832 Oct - 1833 Oct. Notebook

94 leaves; 10 cms. Holograph. OC25.9

Notes of dissections and other anatomical observations

1833 Nov - 1834 Nov. Notebook

94 leaves; 10 cms. Holograph. OC25.10

Notes of dissections and other anatomical observations, including on the circulation of annelids

1833 Dec and undated. Note and sketch book

34 leaves; 16 cms. Holograph and art originals. OC21

Notes and sketches made at London Zoo and in Paris, including a drawing of a lama inserted

1834 Nov - 1836 Feb. Notebook

94 leaves; 10 cms. Holograph. OC25.11

Notes of dissections and other anatomical observations

1836 Feb - 1837 Dec. Notebook

94 leaves; 10 cms. Holograph. OC25.12

Notes of dissections and other anatomical observations, with a description of the entry of the giraffes into London Zoo, 25 May 1836

1836-1912. Sea serpents

ca. 50 leafs; 33 cms and smaller. Printed, holograph and ms transcripts. OC36

A collection of manuscripts, letters, newspaper and magazine cuttings on sea serpents assembled by Owen, with a few later additions. The following holograph letters are inserted: Statham, J. L., 1, 12 Feb 1858; Tennent, J. E., 1 to unknown, undated; Thoms, W. J., 2, 13 Jan – 2 May 1877.

[1838]. *Notebook* 

94 leaves; 10 cms. Holograph and art originals. OC25.14

Rough notes on fossil vertebrates, with sketches, many leaves blank

1838 - 1839 Nov. Notebook

94 leaves; 10 cms. Holograph and art originals. OC25.15

Rough notes on fossil vertebrates, with sketches, many leaves blank

1839 Jan – Sep. Notebook

94 leaves; 10 cms. Holograph. OC25.13

Rough notes on fossil vertebrates

1859–1884. [The British Museum and the British Museum (Natural History)]

102 leaves; 33 cms and smaller; Printed with holograph additions. OC90.4

Newscuttings and extracts from official publications relating to the museums assembled and annotated by Owen.

1869; 1872. Diary

26 leaves; 18 cms. Holograph. OC20

Diary of a visit to Egypt with the Prince and Princess of Wales, January to March 1869, and to Scotland, August and November 1872

## ANNOTATED BOOKS, PAPERS, AND CORRECTED PROOFS

Most of the annotated books listed below were presented to the Museum by Miss Emily Owen in 1915, along with a large number of unannotated books and a collection of reprints of Owen's own papers.

Entries are arranged as follows:

Date. Title with bibliographical details.

Whether interleaved and/or annotated. Note of inserted manuscript materials, including letters; note of inserted printed materials. Pressmark.

1830. An account of the dissection of the parts concerned in the aneurism. *Transactions of the Medico-Chirurgical Society* 16: 219–235.

Corrected proof of Owen's first publication. OC90.3/2-13

1832. On the mammary glands of the Ornithorhynchus paradoxus. *Philosophical Transactions of the Royal Society* 123: 517–538.

Annotated in pencil. One inserted newscutting. OC5(5)

1832. Memoir on the pearly nautilus (Nautilus pompilus, Linn.) with illustrations of its external form and structure. 68 pp. Royal College of Surgeons, London.

Interleaved and annotated. Three holograph notes by Owen and 22 art originals, being the originals paintings for the lithographed plates, inserted. Holograph titlepage and advertisement by Edmund Belfour, p. 1, and a holograph note of George Bennett, p. 7, inserted. Four

letters inserted: A. Carlisle, 25 Nov 1831, p. 46; R. B. Hinds, 24 Oct 1842, back cover; and A. Valenciennes, 24 Dec 1840 and 14 May 1841, back cover. Two proofs of the titlepage and advertisement inserted, with one art print, one cutting, and a poem 'The Chambered Nautilus', 1880, p. 68. OC33.2

1834. On the generation of the marsupial animals with a description of the impregnated uterus of the kangaroo. *Philosophical Transactions of the Royal Society* 125: 333–364. Annotated. One drawing by Owen inserted. OC5(4).

1834. On the ova of the Ornithorhynchus paradoxus. *Philosophical Transactions of the Royal Society* 125: 555–566.

Annotated in pencil, OC5(6).

1835. Aves in Todd, R. B. (Ed.) *The cyclopaedia of anatomy and physiology* 1: 265–358. Interleaved and annotated. 14 holograph notes and three art originals by Owen inserted. 12 art prints, one cutting, and a single leaf 'Specimen of the work' inserted. OC3.

1835. On the anatomy of the Brachiopoda of Cuvier, and more especially of the genera Terebratula and Orbicula. *Transactions of the Zoological Society of London* 1: 145–164. Annotated in pencil. OC5(16).

1835. On the structure of the heart of the perennibranchiate Batrachia. *Transactions of the Zoological Society of London* 1:213–214 [only]. Annotated. OC5(10).

1839. Notice of a fragment of the femur of a gigantic bird of New Zealand. *Transactions of the Zoological Society of London* 3:29–31.

Annotated. Four holograph notes by Owen inserted, and the single leaf prospectus for Owen's *Memoirs on the extinct wingless birds of New Zealand*, 1878. OC61.

1840. Report on fossil reptiles, part I. Report of the British Association for the Advancement of Science for 1839, 43–126.

Interleaved and annotated. Eight holograph notes by Owen inserted, and one by William Clift, p.114. Eight letters inserted: H. G. Bronn, Germany, 5 Oct 1843, p. 88; R. Damon, 16 Aug 1858, p. 46; G. Jaeger, Germany, 22 Apr 1850, p. 124; W. Lee, 16 March 1843, p. 71; R. M. Middleton, 10 Nov 1865, p. 80; R. I. Murchison, 10 Nov 44, p. 74; H. E. Strickland, incomplete and undated, p. 100; and J. J. Walker, 16 Jul 1845, p. 120. One printed cutting inserted. OC14.

1840. The zoology of the voyage of the Beagle . . . Part I. Fossil Mammalia. 111 pp. Smith, Elder & Co., London.

Sparingly annotated. Two holograph notes by Owen inserted. OC27.

1840–1845. *Odontography; or, a treatise on the comparative anatomy of the teeth* . . . 2 volumes, 655 pp., 150 plates. H. Bailliere, London.

Annotation in pencil on a few plates. One holograph note by Owen inserted. One letter of H. Bailliere, 12 Mar 1839, inserted. Two printed cuttings inserted. OC6.

1840–1845. *Odontography; or, a treatise on the comparative anatomy of the teeth* . . . 5 volumes, 655 pp., 150 plates. H. Bailliere, London. Large paper copy.

Interleaved and annotated. 20 holograph notes and seven art originals by Owen inserted, together with three ms notes and seven art originals by unknown hands. Letter of J. A. Preston, incomplete and undated, inserted at p. 627. 13 cuttings, one offprint and 34 art prints inserted. OC28.

1841. Marsupalia in Todd, R. B. (Ed.). The cyclopaedia of anatomy and physiology 3, 74 pp. Interleaved and annotated. Three holograph notes and five art originals by Owen, including a small painting 'Corpora lutea, kangaroo' inserted; two manuscript notes by unidentified writers, one in french inserted. One letter of A. Miller, 27 Aug 1833, inserted at p. 79. Four art prints, and three cuttings inserted. OC1(2).

1841. Monotremata *in* Todd, R. B. (Ed.). *The cyclopaedia of anatomy and physiology* 3, 43 pp. Interleaved and annotated. Four holograph notes by Owen inserted. Letters of H. Butler, [after 1851], and P. Gervais, 13 Dec 1877, inserted at pp. 38 and 4. OC1(1).

1842. Description of the skeleton of an extinct gigantic sloth, Mylodon robustus, Owen, with observations on the osteology, natural affinities, and probable habits of the megatheroid quadrupeds in general. 176 pp. J. Van Voorst, London.

Interleaved and annotated. Four holograph notes by Owen inserted. Letters of W. J. Broderip, 13 Dec 1842, p. 1, J. Daubeny, undated, p. 10, and Mr Everett, 18 Jan 1843, p. 1. One art print

inserted. OC26.

1842. Report on British fossil reptiles, part II. Report of the British Association for the Advancement of Science for 1841. 60–190.

Interleaved and annotated. 18 holograph notes and two art originals by Owen inserted. 17 letters inserted: W. H. Bensted, 19 Feb 1852, p. 84; M. H. Brown, 6 May 1842, p. 124; A. H. Browne, 5 Jun 1862, p. 144; Mr Capron, 29 Sep 1860, p. 156; E. Charlesworth, 15 Mar 1862, p. 110; G. Cubitt, undated, p. 140; W. Cunnington, 12 Mar 1852; M. J. ?Delbes, 22 Jul 1847, p. 144; J. Dinkel, undated, p. 190; F. Dixon, 1 Mar 1843, p. 66; H. Duckworth, 8 Feb 1859, p. 155; W. Fox, undated, p. 124; G. F. Richardson, 26 May 1843, p. 78; A. Robertson, 1 Dec 1842 and undated, pp. 136 and 160; H. G. Seeley, 28 Jul 1869, p. 156; M. Simpson, 1 Jun 1857, p. 88; H. Willett, 13 Dec 1878, p. 126. One printed cutting inserted. OC14.

1843. [Lectures on the comparative anatomy and physiology of invertebrate animals . . .]. 371 pp. J. Van Voorst, London.

Interleaved and annotated. Four holograph notes by Owen inserted. 15 cuttings and nine art prints inserted. 'Mutilated working copy used by the Author in the preparation of the second edition.' OC13.

1846. A history of British fossil mammals and birds. xlvi + 561 pp. J. Van Voorst, London. Interleaved and annotated. 32 holograph notes and seven art originals by Owen inserted, as well as an art original 'Skull dredged in River Tees, July 4 1878'. 11 letters inserted: E. R. Alston, 18 Apr 1874, p. 204; W. Buckland, undated, p. 244; T. Cartridge, 9 May 1872, p. 256; E. Charlton, 23 Oct 1857, p. 486; A. P. Falconer, undated, p. 344; C. W. Fox, Jun 1880, p. 414; R. Holmes, 27 May 1869, p. 506; A. B. Quirk, 1 Aug 1876, p. 446; E. Tennent, undated, p. 458; W. Williams, 3 Jul 1879, p. 456; W. Woolfryes, 17 Jul 1863, p. 560. 19 leaves of corrected proof, 24 cuttings, five art prints, six photographs and notices of the Manchester Literary and Philosophical Society and the Manchester Geological Society inserted. OC9.1.

1846. A history of British fossil mammals and birds. xlvi + 561 pp. J. Van Voorst, London. Annotated. 18 holograph notes and two art originals by Owen inserted, as well as a note by W. Beard: 'Animal bones found in six different caverns'. Five letters inserted: D. Alport, undated, p. 306; T. F. Jamieson, 14 Nov 1859, p. 482; C. Moore, 20 Oct 1858, p. xx; J. Van Voorst, 19 Nov 1886, p. iv; and W. Williams, 1 with a photograph, 24 Nov 1879, p. 448. 17 cuttings, one geological Christmas card, five art prints, and a handbill for the exhibition of the Missouri Leviathan at the Egyptian Hall, Piccadilly, 1842, at p. 298. OC9.2.

1847. Zoological Recreations by W. J. Broderip

19 leaves; 34 cms. Printed with holograph corrections. OC39(1)

Corrected proof of article in Quarterly Review 82: 119-142 and in New Monthly Magazine 163.

1848. Contributions to the history of British fossil mammals (first series). 71 pp. R. and J. E. Taylor, London.

Pencil annotation on the plates. OC52.1.

1848. Contributions to the history of British fossil mammals (first series). 71 pp. R. and J. E. Taylor, London.

Sparingly annotated. Five art prints inserted. OC52.2.

1849. On the nature of limbs. 119 pp. I. Van Voorst, London.

Interleaved and annotated. Two holograph notes and one art original by Owen inserted. Four printed cuttings inserted, including 'Religion and science – Professor Owen and the Manchester Spectator', a long article from *The Manchester Spectator*, 1849, p. 87. OC18.1.

1849. On the nature of limbs. 119 pp. J. Van Voorst, London.

One art original by Owen inserted. One letter of C. C. Blake, 15 Jan 1864, p. 1, inserted. Two printed cuttings inserted. OC18.2.

1849. On parthenogenesis, or, the successive production of procreating individuals from a single

ovum. 76 pp. J. Van Voorst, London.

Interleaved and annotated. Six holograph notes and two art originals by Owen inserted. Four letters inserted: C. E. Gyde, 5 and 8 Dec 1862, p. 76; Royal College of Surgeons, 15 Aug 1849, back cover; Royal Medical and Chirurgical Society, 14 Jun 1849, back cover. Four printed cuttings and two art prints inserted. OC17.

1850. A hunter's life in South Africa by R. G. Cummings

64 leaves; 34 cms. Printed with holograph corrections. OC39(2-3)

Corrected proof of article in Quarterly Review 88: 1-41

1851. Lyell's geology

27 leaves; 34 cms. Printed with holograph corrections. OC39(5) Corrected proof of article in *Quarterly Review* 89: 412–451

1851. Professor Owen – progress of comparative anatomy

95 leaves; 34 cms. Printed with holograph corrections. OC39(4),

(6-8)

Corrected proof of article by W. J. Broderip in Quarterly Review 90: 362-413

1855. Lectures on the comparative anatomy and physiology of the invertebrate animals . . . Second edition. 690 pp. Longman, Brown, Green and Longmans, London.

Annotated. Numerous holograph notes and one art original by Owen inserted. Eight cuttings and one art print inserted. With the signature 'W. G. Palgrave on the titlepage. OC8.

1855. Principes d'osteologie comparee, ou recherches sur l'archetype et les homologies du squelette vertebre. 440 pp. J. B. Bailliere, Paris.

Interleaved and sparingly annotated. One holograph note by Owen inserted, and one art print. OC11.

1859. Preface in Observations and reflections on geology by John Hunter. lviii pp. Royal College of

Surgeons, London.

Sparingly annotated. Letters inserted: P. de M. G. Egerton, 27 Jan 1860, front cover; and G. Milroy, 17 Jan 1860, front cover. Two copies of Owen's *Synopsis of the lectures on the structure and habits of extinct vertebrate animals*, 1855, inserted, with a single sheet 'Proposal for erecting a public monument to the memory of John Hunter', 1847. The signature of John Quekett is on the titlepage. OC50.

1860. Darwin on the origin of species

36 leaves; 34 cms. Printed with holograph corrections. OC39(9)

Corrected proof of article in *Edinburgh Review* 111: 487–532

1860. Palaeontology, or a systematic summary of extinct animals and their geological relations. 420 pp. A. and C. Black, Edinburgh.

Annotated. Four holograph notes by Owen and four printed cuttings inserted. P 15.o.0.

1860. Memoir on the Megatherium, or, giant ground-sloth of America (Megatherium americanum, Cuvier). 84 pp. R. and J. E. Taylor, London.

Annotated. Six letters inserted: F. Black, 15 Nov 1870, p. 1; W. Buckland, 29 Jan ?1848 and undated, p. 12; A. Pozzi, Argentina, 12 Dec 1869, with a photograph of Megatherium, back

cover; Royal Society of London, 11 Jan 1861, back cover; and Williams and Norgate, 17 Jan 1861, p. 1. OC54.

1861. Palaeontology, or a systematic summary of extinct animals and their geological relations.

Second edition. Xvi + 463 pp. A. and C. Black, Edinburgh.

Interleaved and annotated. 17 holograph notes and five art originals by Owen inserted, with an art original by W. H[ome] C[lift], 'Lowther, Quarry Man', depicting the original discoverer of the Deinotherium. 17 cuttings and three art prints inserted, with two photographs of fossil footprints from Shropshire by T. O. Ward, 1868, p. 264. The volume is a proof copy, presumably returned to Owen by the printer. OC12.

1862. On the extent and aims of a national museum of natural history . . . 126 pp. Saunders, Otley and Co., London.

Four holograph notes by Owen inserted. A printed plan and section of the museum, 1862, and a printed plan, 1880, inserted at the back cover. OC15.

1863. Monograph on the aye-aye (Chiromys madagascariensis, Cuvier). 72 pp. Zoological Society, London. Reprinted with additions from Transactions of the Zoological Society of London 5.

Annotated. Two holograph notes by Owen inserted, with a note on the foetus of the aye-aye in an unknown hand, p. 72. Four letters inserted: H. Holland, 28 Feb [1863], p. 58; A. Panizzi, 22 Jul 1859, p. 8; H. Sandwith, 24 Feb 1863, p. 1; and J. Wyman, 17 Sept 1863, back cover. Five cuttings inserted and an art print of *Tarsius spectrum* by Burmeister, 1846, back cover. OC31.

1866. *Memoir on the dodo* (Didus ineptus, *Linn.*) . . . 54 pp. Taylor and Francis, London. Interleaved and annotated. Three ms transcripts and one holograph note by Owen inserted. Six letters inserted: G. Clark, Mauritius, 5 Nov 1867, p. 1; W. D. Clarkson, Jamaica, 26 Mar 1857, p. 1; C. E. Gyde, 6 Mar 1867, back cover; J. Morris, 18 Dec 1860, p. 1; and S. J. Whitmee, 11 Aug and 9 Sep 1871, p. 1. One offprint and one cutting inserted, with a notice of a Zoological Society meeting, 6 Jan 1866, and a chromolithograph birthday card showing a dodo chick being photographed. OC55.

1866. On the anatomy of vertebrates. Volume I. Fishes and reptiles. xlvii + 650 pp. Longman, Green and Co., London.

Interleaved and annotated. 24 holograph notes by Owen inserted. Four letters inserted: P. de M. G. Egerton, 1866, p. i; A. Gunther, 11 Feb 1863, p. 338, and 10 Aug 1863, p. i; ?Mrs Rixon, 14 Dec 1866, p. 275. Seven cuttings and four art prints inserted. OC10.1.

1866. On the anatomy of the vertebrates. Volume II. Birds and mammals. Viii + 592 pp. Longmans, Green and Co., London.

Interleaved and annotated. 35 holograph notes by Owen and two manuscript notes by unknown authors inserted. Letter of W. White, 31 Dec 1868, inserted after p. 592. 22 cuttings and eight art prints inserted. Three photographs inserted: black swan skeleton from Sydney Museum, p. 15; Javanese female native by W. Woodbury, 1861, p. 294; and dugong skeleton, p. 431. OC10.2.

1866. On the anatomy of vertebrates. Volume II. Birds and mammals. Viii + 592 pp. Longmans, Green and Co., London.

Sparingly annotated. One holograph note by Owen inserted. Owen's account with Longman, Brown and Co, 1858, inserted at p. i. Two printed cuttings inserted. OC10.4.

1868. On the anatomy of the vertebrates. Volume III. Mammals. 838 pp. Longmans, Green and Co., London.

Interleaved and annotated. 24 holograph notes and two art originals by Owen inserted, with a manuscript note on the brain of the echidna, Melbourne, 3 Aug 1844, p. 102. Letters of J. Sawyer, 9 Apr 1859 and 1861, p. 630, and T. Eyton, undated, p. 637, inserted. 22 cuttings and two art prints inserted, with a single leaf, 'Prof. Faber's talking machine', 1880, p. 602. Photograph of a dolphin tooth inserted, p. 282. OC10.3.

1868. On the anatomy of the vertebrates. Volume III. Mammals. 915 pp. Longmans, Green and Co., London.

Sparingly annotated. Five cuttings inserted. OC10.5.

1869. Monographs on the British fossil Reptilia from the Kimmeridge Clay, No. III. 12 pp. Palaeontographical Society, London.

Annotated. Art original in watercolour of *Leiodon anceps* by H. Scharf, 1840, inserted at back cover. Letter of E. Charlesworth, 1 Mar 1871, inserted at p. 12. One art print inserted. OC49.

1873. Anatomy of the king crab (Limulus polyphemus, Latr.) 50 pp. Taylor and Francis, London. Sparingly annotated. OC56.

1875. The last journals of David Livingstone

71 leaves: 34 cms. Printed with holograph corrections.

OC39.10-12).

Corrected proofs of article in Quarterly Review 138: 498-528

1875. Monographs on the British fossil Reptilia of the Mesozoic formations. Part II. 93 pp. Palaeontographical Society, London.

Sparingly annotated. One holograph note by Owen inserted. Letters of J. R. Shopland, 18 Jan 1876, and W. H. Smith, 1 Mar 1876, inserted at p. 1. One cutting inserted. OC47.

1876. Description of the fossil reptiles of South Africa in the collection of the British Museum. 88 pp. British Museum, London.

Seven holograph notes by Owen inserted, and three art originals in pencil by W. H. Wesley, p. 88. Two cuttings and one art print inserted. OC32.

[1876]. [Letter] to the Editor of 'Leisure Hour' 14 leaves; 23 cms. Holograph. OC90.1(3)/3–16

On the chronology of ancient Egypt

1878. Memoirs on the extinct wingless birds of New Zealand . . . Two volumes, 520 pp. Taylor and Francis, London.

Annotated. 24 holograph notes and one art original by Owen inserted. Holograph notes by W. J. Broderip, p. 316, and W. von Nathusius, p. 320, inserted. Letters of W. S. Dallas, 13 Jun 1866, p. 320, and J. Hector, 20 May 1879, back cover, inserted. Three cuttings and two art prints inserted, with corrected proofs of pp. i – vii, p. 1, two maps of New Zealand, back cover, and a notice of the auction of a moa egg, J. C. Stevens, 24 Nov 1865, back cover. Six photographs of limb bones inserted at p. 145, and three pencil rubbings of moa footprints by T. W. Cockburn Hood at p. 452. OC61.

1879. Supplementary observations on the anatomy of Spirula australis, Lamarck. Annals and Magazine of Natural History, (5)3:1–16.

Annotated. Letter of H. N Moseley, 11 Feb 1879, inserted on back wrapper. OC23(15).

1882. Ancient life in South America

13 leaves; 34 cms. Printed with holograph corrections. OC39(13) Corrected proof of article in *Edinburgh Review* 155: 186–204

1882. Experimental physiology, its benefits to mankind, with an address on unveiling the statue of William Harvey at Folkestone, 6th August 1881. 216 pp. Longmans, Green and Co., London. Sparingly annotated. One holograph note by Owen inserted, and one printed cutting. OC19.

1884. Antiquity of Man, as deduced from the discovery of a human skeleton during the excavations of the East and West India Docks extension . . . 33 pp. J. Van Voorst, London.

Sparingly annotated. One list of copies transmitted and two printed cuttings inserted. OC16.

1889. A general guide to the British Museum (Natural History), Cromwell Road, London S.W. 70pp. British Museum (Natural History), London. Sparingly annotated. OC64.

## AUTOBIOGRAPHICAL AND GENEALOGICAL PAPERS

1868-1889. Memoir of Profr. Owen

ca.40 leaves, 22cms. Printed with holograph additions. OC24.

This volume contains cuttings and offprints relating to Owen, together with holograph notes on the chief events and publications of each year of his life, from 1824 to 1888. A biographical 'Statement to the Trustees of the British Museum, sent 7th November 1883' is also inserted. Two portraits are also included. On the endpaper Owen has written 'Data for scientific biography'.

1882 Aug 1. [Note on connections with the Bisset and Hawkins families]

1 leaf; 23 cms. Holograph. OC62.Supplement 3

[after 1882] [Notes on the history of Owen's family] 5 leaves; 23 cms and smaller. Holograph. OC84

[1885] Arms assigned to Sir Richard Owen, K.C.B.

1 leaf; 23 cms. Holograph. OC62. Supplement 3

### ORDERS AND MEDALS

Owen's orders and medals are housed in a wooden frame, which also holds a portrait of Owen as an old man, and a view of his study in Sheen Lodge. In the following list, reference is made to the numbers painted beside each item on the frame. The frame hangs in the Rare Book Room of The Natural History Museum, beside the case holding the rest of the Owen Collection, and the smaller portrait in oils by W. H. Pickersgill.

I. Star of the Most Honourable Order of the Bath (Civil Service). Owen received the Companion of the Bath on 17 June 1873, and was created a Knight Companion of the Bath on his retirement from the Museum on 5 January 1884.

II. Badge of the above order.

- III. Badge of the Prussian 'Order pour la Merité', conferred 20 December 1851.
- IV. Cross of an 'Officer de la Légion d'Honneur', conferred 3 August 1855.

V. Cross of an 'Officier de l'Ordre de Léopold', conferred 9 July 1872.

VI. Cross of a 'Cavaliere del Ordine di SS. Marrizio e Lazzaro', conferred 22 September 1862.

VII. Star of 'Cavalleiro da Ordem da Roza of Brazil', conferred 21 October 1867.

- VIII. Impression of the archetype seal, which Owen used for sealing his letters. The seal is engraved with his diagrammatic scheme of an ideal vertebrate.
- 1. Royal Society of London, Royal Medal in gold, awarded 30 November 1846.
- 2. Royal Society of London, Royal Medal in silver, awarded 30 November 1846.

3. Royal Society of London, Copley Medal in gold, awarded 1 December 1851.

- 4. Geological Society of London, Wollaston Medal in palladium, awarded 16 February 1838.
- 5. Royal College of Surgeons of England, Honorary Gold Medal in gold, awarded 9 August 1883.
- 6. Linnean Society of London, Linnean Gold Medal, awarded 24 May 1888

7. Royal College of Physicians, Baly Gold Medal, awarded 26 June 1869

- 8. Royal Society of New South Wales, Clarke Medal in bronze, awarded 12 May 1880.
- 9. Zoologische Gesellschaft zu Hamburg, Bronze Medal, awarded 17 October 1863.
- 10. Reale Accademia dei Lincei, bronze plaque, awarded 2 December 1883.
- 11. Leeds School of Medicine, Hunter Bronze Medal, probably sent to Owen as a specimen when it was instituted in 1834.
- 12. Lorenz Oken, Centenary Medal in bronze, struck for the 52nd Versammlung der Deutscher Naturforscher und Aerzte in 1879.
- 13. James Edward and Maria Emma Gray, Bronze Medal, struck in 1862.
- 14. Michel Eugene Chevreul, Bronze Medal struck in his honour by the Académie des Sciences, Paris, 2 September 1872.

- 15. Ditto, Bronze Medal celebrating his 100th birthday, 31 August 1886.
- 16. Carl Gustav Ehrenberg, Bronze Medal commemorating the jubilee of his doctorate, 5 November 1868.
- 17. Societa Italiana delle Scienze, Centenary Medal, in bronze, struck 1882.
- 18. VII Congresso degli Scienziata Italiani, Naples, 1845, Bronze Medal awarded to participants.
- 19. Sir Walter Scott, Bronze Medal, struck in 1827.
- 20. Institut de France, Académie des Sciences, Bronze Medal commemorating the transit of Venus, 8 9 December 1874, awarded 1877.
- 21. Sir Francis Chantrey, Silver Medal, issued by the Art Union of London, struck in 1846.
- 22. Ditto. Bronze Medal, issued by the Art Union of London, struck in 1846.
- 23. Sir Joshua Reynolds, Bronze Medal, issued by the Art Union of London, struck in 1845.
- 24. Académie Royale des Sciences, Lettres et Beaux Arts de Belgique, Centenary Medal, in bronze, awarded in 1872.
- 25. Taylor Combe, Bronze Commemorative Medal, struck after his death in 1826. Combe was Keeper of Coins and Antiquities at the British Museum.
- 26. Antoine Cesar Becquerel, Bronze Medal in honour of his academic jubilee, issued by the Académie des Sciences, Paris, 13 April 1874.
- 27. Pierre Joseph van Beneden, Bronze Medal in honour of his fifty years' professorship at the Louvain Catholic University, 1836–1886.
- 28. Arthur Wellesley, Duke of Wellington, Commemorative Medal, in bronze, struck August 1841.
- 29. George, Prince of Wales, later King George III, Bronze Medal to commemorate his 21st birthday, 4 June 1759.
- 30. Oueen Victoria, as Duke of Lancaster, Jubilee Medal, in bronze, struck in 1887.
- 31. Great Exhibition of the Works of Industry of All Nations, Bronze Medal 'For Service', awarded 1851.
- 32. Ditto. Bronze Medal awarded to Owen as Chairman of Jury IV, 1851.
- 33. Crystal Palace Opening, Commemorative Medal, in bronze, 10 June 1854. Heads of Queen Victoria and Prince Albert on obverse.
- 34. Ditto. Head of Joseph Paxton on obverse.
- 35. Ditto. Allegorical figure opening doors of the Palace on obverse.
- 36. Exposition Universelle: Agriculture, Industrie, Beaux Arts, Paris 1854. Commemorative Medal, in bronze. Head of Napoleon III on obverse.
- 37. Ditto. Commemorative Medal, in silver. Head of Napoleon III on obverse.
- 38. Ditto. Commemorative Medal, in gold. Head of Napoleon III on obverse.
- 39. Ditto.
- 40. International Exhibition, Sydney, New South Wales, 1879. Silver Medal awarded to Owen as a member of the Royal Commission for the British Section.
- 41. International Exhibition, Sydney 1879 1880, Melbourne 1880 1881. Awarded to Owen as a member of the Royal Commission for the British Section.
- 42. International Exhibition, Melbourne 1880. Awarded to Owen 'for services'.
- 43. New Zealand Exhibition, Dunedin 1865, Honorary Silver Medal, awarded to Owen 'for services rendered to the natural history of New Zealand by works on comparative anatomy, especially in the anatomy of the moa'.
- 44. Adelaide Jubilee International Exhibition, 1887, Bronze Medal awarded to Owen. who was one of the Commissioners.
- 45. Charles Ottley Groom, Mantuan Medal, in copper gilt, sent to Owen. See the newscutting on OC90.4/1.

# **CERTIFICATES AND DIPLOMAS**

Owen's certificates and diplomas are housed, together with a variety of indentures, admission cards, covering letters, portraits and other documents, in a single large volume, OC74. The reference numbers used in the volume are the basis of the following list.

- 1. Indenture of apprenticeship to Leonard Dickson, surgeon, 11 August 1820.
- 2. Indenture of transfer of apprenticeship to Joseph Steed, 19 June 1822.
- 3. Indenture of transfer of apprenticeship to James S. Harrison, 13 December 1823.
- 9. Royal Infirmary, Edinburgh, certificate of attendance, 20 November 1825.
- 15. Edinburgh University, certificate of attendance, 22 April 1825.
- 16. St Bartholomew's Hospital, London, Certificate of Attendance, 1825 1826
- 17. St Bartholomew's Hospital, London, Certificate of Attendance at John Abernethy's lectures, May 1826.
- 18. Royal College of Surgeons, London, Diploma of Membership, 18 Aug 1826
- 19. Society of Apothecaries, London, Certificate of Qualification to Practise, 7 Jan 1830.
- 20. King's College, London, testimonial of William Clift supporting Owen's application as Demonstrator of Anatomy, 19 April 1830.
- 21. Academy of Natural Sciences of Philadelphia, diploma of election as Correspondent, 28 Jan 1834.
- 22. Société Philomathique de Paris, diploma of election as Correspondent, 20 Feb 1836.
- 23. Académie Royale de Médecine de Paris, diploma of election as Correspondent, 24 Feb 1836.
- 24. Königlich-Preussische Akademie der Wissenschaften, Berlin, diploma of election as Correspondent, [24] March 1836.
- 25. Physikalische-Medicinische Societat zu Erlangen, diploma of election as Corresponding Member, 1 August 1836.
- 26. Société Imperiale des Naturalistes de Moscou, diploma of election as Ordinary Member, 27 April 1837.
- 27. Royal Institution of Great Britain, letter announcing election as Fullerian Professor, 19 June 1837.
- 28. Gesellschaft für Beförderung der Naturwissenschaften zu Freiburg, diploma of election as Corresponding Member, 29 August 1837.
- 30. Boston Society of Natural History, diploma of Honorary Membership, with covering letter, 24 October 1839.
- 31. Hunterian Society, letter announcing election as Honorary Member, 4 March 1840.
- 32. Royal Geological Society of Cornwall, letter announcing election as Honorary Member, 24 September 1841.
- 33. Königlich-Bayerische Akademie der Wissenschaften, diploma of election as Foreign Member, 25 August 1842.
- 34. Königliche Friedrich-Alexanders-Universitat, Erlangen, diploma conferring the degree of Honorary Doctor of Medicine, 25 August 1843.
- 36. Kongliga Svenska Vetenskaps-Akademien, Stockholm, diploma of election as Foreign Member, 13 December 1843.
- 37. American Philosophical Society, diploma of election as Honorary Member, with covering letter, 17 January 1845.
- 39. Royal Society of Edinburgh, letter announcing election as Honorary Fellow, 18 March 1845.
- 40. Société des Sciences Naturelles du Canton de Vaud, diploma of election as Honorary Member, 22 April 1846.
- 41. Naturhistorischer Verein für das Grossherzogthum Hessen, diploma of election as Honorary Member, 25 August 1846.
- 42. Naturwissenschaftlicher Verein in Hamburg, diploma of election as Honorary Member, 30 December 1846.
- 43. Royal Medico-Chirurgical Society, diploma of election as Honorary Fellow, 9 February 1847.
- 44. Edinburgh University, Diploma conferring the Honorary Degree of LL.D., 17 May 1847
- 45. Accademia delle Scienze dell' Istituto di Bologna, diploma of election as Honorary Fellow, 20 June 1847.
- 46. Académie des Sciences, des Lettres et des Beaux-Arts de Belgique, diploma of election as Associate, with covering letter, 17 December 1847.



Diploma of election to honorary membership of the Naturhistorischer Verein für das Grossherzogthum Hessen, 25 August 1846 (1.10 item 41).

48. Société du Muséum d'Histoire Naturelle de Strasbourg, diploma of election as Corresponding Member, 8 February 1848.

49. Kaiserliche Akademie der Wissenschaften in Wien, Mathematisch-Naturwissenschaftliche Classe, diploma of election as Corresponding Member, 24 May 1848.

- 50. Academia Real de Ciencias de Madrid, letter announcing election as Foreign Correspondent, 29 June 1848.
- 52. Société de Biologie de Paris, diploma of election as Associate Member, with covering letter, 18 November 1848.
- 53. Royal College of Surgeons in Ireland, diploma granting Honoray Fellowship, 19 May 1849.
- 54. Medical Society of Edinburgh, diploma of election as Honorary Member, with covering letter, 8 March 1850.
- 55a. Great Exhibition of the Works of Industry of All Nations, diploma of appointment as Juror in Jury IV, 1 May 1851.
- 56. Kongliga Vetenskaps-Societeten I Upsala, diploma of election as Honorary Member, 25 June 1851.
- 58. Natuurkundige Vereeniging in Nederlandsch Indië, diploma of election as Corresponding Member, with covering letter, 17 February 1853.
- 60. Asociacion de Amigos de la Historia Natural del Plata, diploma of election as Corresponding Member, 22 August 1855.
- 61. American Academy of Arts and Sciences, Boston, Massachusetts, letter announcing election as Foreign Honorary Member, 14 November 1855.

- 62. Académie des Sciences, Paris, letter announcing award of the Prix Cuvier for 1856, 2 February 1857.
- 63. Kaiserliche Leopoldino-Carolinische Akademie der Naturforscher, Vratislava, diploma of election as Honorary Member, 1 October 1857.
- 64. Royal Institution of Great Britain, indenture of appointment as Fullerian Professor, 14 June 1858.
- 65. Royal Society of Literature, diploma of election as Honorary Member, 21 July 1858.
- 66. Académie des Sciences, Paris, letter announcing election as Foreign Associate, 25 April 1859.
- 68. Königliche Gesellschaft der Wissenschaften zu Göttingen, diploma of election as Foreign Member, with covering letter, 17 December 1859.
- 70. Institut Egyptien, diploma of election as Honorary Member, 5 March 1861.
- 71. Museum Královstoi České, Prague, diploma of election as Honorary Member, 8 March 1861.
- 72. Odontological Society of Great Britain, diploma of election as Honorary Member, 2 December 1861
- 74. L'Ordre de St. Maurice et St. Lazare, letter announcing creation as Chevalier, 22 September 1863
- 76. Anthropological Society of London, diploma of election as Honorary Member, 24 March 1863.
- 77. University of Melbourne, diploma of thanks for services rendered, 25 March 1863.
- 78. Zoologische Gesselschaft zu Hamburg, letter announcing election as Honorary Member, 17 October 1863.
- 79. Odontographic Society of Pennsylvania, letter announcing election as Honorary Member, 7 Iune 1864.
- 80. Société Imperiale des Sciences Naturelles de Cherbourg, letter announcing election as Corresponding Member, 11 December 1864.
- 81. National Academy of Sciences of the United States of America, diploma of election as Foreign Associate, with covering letter, 5 January 1865.
- 83. Die Pollichia: ein Naturwissenschaftlicher Verein der Rheinpfalz, diploma of election as Honorary Member, with covering letter, 13 June 1866.
- 85. Magyar Tudomanyos Akademia, Budapest, letter announcing election as Foreign Corresponding Member, 30 January 1867.
- 86. Da Ordem da Rosa, Brazil, diploma creating Owen an Official, with covering letter, 21 October 1867.
- 88. Reale Istituto Lombardo de Scienze e Lettere in Milano, diploma of election as Corresponding Member, 2 July 1868.
- 89. Royal College of Physicians, London, letter announcing award of Baly Medal, 25 June 1869. 91. L'Ordre de Léopold (Civile), Belgium, diploma creating Owen an Officer, with covering letter, 9 July 1872.
- 94. Medical Society of London, diploma of election as Honorary Member, 7 November 1873. 95. Académie de Médecine, Paris, letter announcing election as Foreign Associate, 14 April 1874.
- 96. Academy of Medicine of New York, diploma of election as Corresponding Member, 21 May 1874.
- 97. Società Italiana delle Scienze, diploma of election as Foreign Member, 8 December 1877.
- 98. International Exhibition, Melbourne, 1881, diploma accompanying a silver medal, 1881.
- 100. Kaiserliche Akademie der Wissenschaften, Mathematische-Naturwissenschaftlichen Classe, diploma of election as Honorary Member, 25 July 1883.
- 101. Royal College of Surgeons of England, diploma accompanying the Honorary Gold Medal, 9 August 1883.
- 102. Reale Accademia dei Lincei, diploma of election as Foreign Member, 2 December 1883.
- 103. Reale Accademia Valdarnese del Poggio, diploma of election as Corresponding Member, with covering letter, 29 December 1883.
- 105. Worshipful Company of Leathersellers, London, letter announcing election as Liveryman, 6 February 1884.

106. Geologists' Association, illuminated address marking Owen's retirement from the British Museum, 15 March 1884.

107. Hertfordshire Natural History Society and Field Club, diploma of election as Honorary Member, 17 February 1885.

108. Société Imperiale des Naturalistes de Moscou, diploma of election as Honorary Member, with covering letter and draft reply, 24 April 1886.

111. Regia Universita degli Studi, Bologna, diploma conferring Doctor's degree, 13 June 1888.

# **PORTRAITS**

The Museum holds two oil paintings of Owen by W. H. Pickersgill (both 1844), and one by W. Holman Hunt (1881). The collection also includes an anonymous pencil portrait (1831), a bronze statue by Thomas Brock (1896), a marble bust by Michael Wagmuller (1871) and a plaster bust by Sir William H. Thornycroft (1880).

Also in the Museum's portrait collection are a number of photographs, engravings and other prints of Owen. Many of these are mounted in an album, OC88, with others in with the diplomas and certificates in OC74 and among the Palaeontology Library portraits. Included in the collection are fourteen lithographs and engravings, two of them being caricatures, dating from between about 1845 and 1895. The Museum holds fifteen original photographs of Owen dating from about 1850 until just before his death in 1892.

# William Clift

William Clift (1775–1849) was born and grew up in Cornwall. He moved to London in 1792 to become the pupil and amanuensis of John Hunter (1728–1793), and took charge of Hunter's museum at his master's death. When the Company of Surgeons, soon to become the Royal College of Surgeons, took over the Museum in 1799, Clift became the first Conservator, a post he held for forty three years. Richard Owen became Clift's assistant in 1827, and married Clift's daughter, Caroline, in 1835. Owen bought some of Clift's manuscripts at the sale of his effects, including presumably some, if not all, of those listed below.

### CORRESPONDENCE

Letters addressed to William Clift are bound in amongst the correspondence of Richard Owen in OC62. A large number of family letters of Clift, together with rough drafts and fair copies of his out-letters are bound in OC62 volumes 7 and 8.

Abernethy, John (1764–1831). 1 draft of William Clift, 1830 Jan 7. 8/113

Abernethy, Anne (wife of John) (1779–1854). 4 drafts of William Clift, 1833 Sep – 1846 Dec. 8/122, 198–199, 269, 303

Abernethy, Miss (daughter of John). 4 drafts of William Clift, 1839 Nov – 1847 Jul. 8/178–179, 223, 299, 304

Abinger; James Scarlett, Lord (1769–1844). 1 draft of William Clift, 1841 Dec 23. 8/205

Angelis, Pedro de, Argentina. 1 translation with notes by Owen, 1841 Aug 12. L. Mss CLI. Arbouin, Samuel (son-in-law of John Abernethy). 1 draft of William Clift, 1840 Jun 12. 8/183

Babington, Dr B G. 1 draft of William Clift, 1840 Mar 13. 8/181

Babington, William (1756–1833). 1 draft of William Clift, 1823 Aug. 8/51

Baillie, Agnes (sister of Matthew Baillie). 1 (copy), with reply, 1845 Aug 6-8. 8/270-273

Baillie, Joanna (sister of Matthew Baillie). 3 drafts of William Clift, 1826 Feb – 1833 Sep. 8/83, 97, 122

Baillie, William Hunter (son of Matthew Baillie). 1 draft of William Clift, ca.1835. 8/142–144 Barnwell, W. 1 with draft reply, 1825 Aug 20. 2/

Lancolns Sun Hielde Samary 7.1820. My dear fix The suddenness of M. Tower's departure for Birmingham prevents me from writing you a long episke on the occasion, and therefore without further proface I beg leave to recommen kin mail strongly to your good offices; which when you know him so well as I do, I firmly believe you will not Mon will find him to be a very templary young man. well informed in all that relates to his prolession, und execlient anatomist, and sober and sodale very far beyond any young man I ever know. If you succeed in depriving me of his assistance you will do me a great disservices: but if it is for his ford anontage I should be very sorry Mat you should think me to Solfish as to wish to retrain him here when he might, in such an one ous that to which he assires, be so much more advortageously emple Institution as being more suited to his talents and that of your trust father, Institution as being more suited to his talents and his talents and his talents and his talents than some oney got of he succeeds as well as he describes, he cannot fail of doing well: he will more over, set all your young then a good example for application, and attention to With best wishes for your health brancie my dear dir

Joseph Hodgson Esq

Batty, Robert (?1763-1849), 1 draft of William Clift, 1841 Mar 13, 8/196

Bauer, Franz Andreas (1758–1840). 1 with draft replies, 1817 Oct 2 – 14. 2/358- 359, 7/340, 342

Bell, Benjamin. 1 with draft reply, 1823 Sept 27. 8/52-53

Bell, Sir Charles (1774-1842). 1 with draft reply, ca. 1815. 3/81-82

Biron -. 1, 1823 Aug. 4/144-145

Blagden, Sir Charles (1748–1820), France. 1, 1818 Sep 8. 4/168

Bowdich, Thomas Edward (1791–1824). 2, 1822 Feb – Mar. 4/368–369; L Handwriting Coll. BOW

Bowdich, Mrs. 1 draft of William Clift, 1827 Nov 8. 8/101

Bowring, John (1792-1872). 1, 1838 Nov 10. 4/393

Broderip, William John (1789–1859). 1, 1845 Oct 31; 1 to Mrs Clift, 1848 Jun 2. 5/133–134, 156–157

Brodie, Sir Benjamin Collins (1783-1862). 1 draft of William Clift, 1841 Oct 27. 8/204

Brodie, Peter Bellinger (1815-1897). 1, 1834 Jan 22. 5/363-364

Brookes, Joshua (1761-1833). 1 draft of William Clift, 1826 Jun 13. 8/86

Buckland, William (1784-1856). 4 drafts of William Clift, 1822 Dec - 1841 Feb. 8/42, 82, 133

Carlisle, Sir Anthony (1768–1840). 2 drafts of William Clift, 1820 Jul – 1835 Jan. 8/21, 131–132 Carter, Dr. 1, 1829 Mar 26, 6/355–356

Charlesworth, Edward (1813-1893). 1 and note, [1835 Jun]. 7/49-52

Charlewood, Colonel. 1 draft of William Clift, 1846 Apr 7. 8/296

Chevalier, T. 2, 1822 Aug - 1823 Oct. 7/86-87

Clark, J.J. 1, 1824 Feb 18. 7/116

Clift, Ann (wife of John), 1 draft of William Clift, 1819 Dec 20, 8/20-21

Clift, Caroline (daughter of William, later Mrs Owen). 37 from William Clift: early letters addressed jointly to Caroline and her brother William, later ones to Caroline and her husband Richard, or to Caroline and son William, 1813 Feb – 1848 Nov. 7/318–321, 332; 8/3–4, 92, 136, 141, 158–159, 173–174, 185–186, 188–189, 191–192, 210–211, 213–215, 229–230, 232–239, 242, 261–264, 267–268, 270–271, 274–283, 285–289, 297–298, 305–306, 309–310

Clift, Caroline Harriet (wife of William). 1 to William Clift, 1834 Sep 9; 4 to Caroline Clift, 1813 Feb – 1848 Nov; 28 from William Clift, some addressed jointly to mother, sister and brother, 1807 [Jun] – 1836 Sep. 7/308–309, 311- 312, 314–317, 327–328, 333–338; 8/8–19, 24–25, 44–49, 54–59, 71–74, 102–103, 116–117, 126–127, 152–153, 305

Clift, Elizabeth (sister of William). 35 from William Clift, some addressed jointly to his brother and sisters, 1792 Feb 5 – 1822 Nov. 7/241–252, 255- 295, 298–305; 8/5, 40–41

Clift, John (brother of William). 2, including 1 draft, 1792 Oct – 1814 Dec. 7/253–254, 326

Clift, William. 20 drafts to unknown recipients, 1812 Mar – 1846 Feb; 1 to Everard Home, 1818 Aug 26; 1 to Lady Home, 1817 Sep 26. 7/313, 329, 339, 343; 8/1–2, 43, 84, 107–111, 134–135, 154, 157, 182, 187, 222, 231, 244–246, 292

Clift, William Home (1803–1832). 3 from William Clift, 1822 Aug – 1827 Sep. 8/31–32, 87–88, 98–99

Cline, Mrs (wife of Henry). 1 draft of William Clift, 1833 Sep 9. 8/122

Colquhoun, J N. 1, 1823 Apr 25. 8/351-352

Cooper, William, USA. 1, 1833 Feb 15. 8/391

Cottle, Joseph (1770–1853). 2, 1823 May – 1825 Apr; 1 to W Buckland, 1824 Dec 30. 9/1–6

Coulson, William (1802–1877). 1 draft of William Clift, 1827 Oct 24. 8/100

Crozier, H, India. 1, 1845 Apr 19. 9/114-115

Cullum, Sir Thomas Gery (1741–1831). 1 with draft reply, 1829 Sep 19 – Oct 27. 8/111; 9/121–122 Cumberland, George jun. 1, [?1820]. 9/123–124

Cuvier, Baron Georges (1769–1832). 1, with 4 drafts, [1820/1] – 1826 Sep and unknown. 8/21, 30, 43, 89; L MSS CLI

Dennett, John (1790–1852). 1 draft of William Clift, 1834 March 22. 8/125

Dick, Sir Page. 1 draft of William Clift, 1843. 8/240-241

Dutton, Samuel. 2, 1812 Mar - Apr. 10/260-263

Earle, Henry (1789-1838). 1 to David Dundas, 1812 May 1. 10/276-279

Edwards, Mr. 2, 1823 Apr – Dec. 10/290–293

Fall [or Sall], J S. 3, 1816 Mar - Sep. 12/139-144

Fisher, George. 1 printed, 1825 Apr 7. 12/214-215

Fitton, William Henry (1780–1861). 1 draft of William Clift, 1827 May 13. 8/94

Forbes, Sir Charles Fergusson (1779-1852). 3 drafts of William Clift, 1845 Feb. 8/254-259

Franklin, Mr. 1 draft of William Clift, 1827 May 11. 8/96

Freshfield, Mr. 1, 1834 Jan 10. 13/70

Gahombe, R. 1, 1817 Oct 14. 13/112

Gibson, John (d 1840). 1, 1824 Jun 9; 1 to Mr Maiden, undated. 13/131-133

Gilbert, Davies (1767-1839). 1 draft of William Clift, 1824 Apr 22. 8/60

Gilbert, Miss Lucy. 2 drafts of William Clift, 1843 Apr. 8/225–226

Gilbert, Nancy (wife of Walter Raleigh). 1 draft of William Clift, 1814 Dec. 7/325

Gilbert, Walter Raleigh (1752–1837). 5 drafts of William Clift, [1813] – 1827 Apr. 7/324, 330; 8/67, 91. 93

Goode, Thomas. 1, 1833 Jun 24. 13/176-177

Gray, John Edward (1800-1875). 1, 1848 Nov 20. 13/302-303

Green, Joseph Henry (1791-1863). 1, undated. 19/65

Grey, Auchitel. 1, 1815. 14/12

Hakewill, Henry (1771-1830). 1, 1822 Aug 17. 14/209a

Halford, Sir Henry (1766-1844). 1 to an unknown recipient (copy), 1811 Nov 14. 7/329

Harris, J. W., Australia. 1 copied by Clift, to Joseph Rule, 1837 Feb 28. 22/444c

Henderson, B.C. 1 draft of William Clift, 1824 Jul 22, 8/68

Herschel, Sir John Frederick William (1792–1871). 1 draft of William Clift, 1836 Jan 12. 8/147–148

Hetling, William. 1 with newscuttings, 1831 Mar 10. OC59.2/193-194

Hodgson, Joseph (1788–1869). 1 draft of William Clift, 1830 Jan 7. 8/113

Holloway, Rev H. 1 draft of William Clift, 1833 Sep 3. 8/118-119

Home, Sir Everard (1756–1832). 15 with 6 draft replies, 1808 Sep – 1839 Mar. 7/310, 341; 8/163–164, 168–169; 15/312–314, 317–326, 329–335

Home, James Everard (1798-1854). 1, 1840 Jun 15. 15/338-339

Home, Lady Jane [wife of Sir Everard]. 2 with draft reply, 1817 Sep and undated. 15/315–316, 336–337

Honey, Joanna (sister of William Clift). 8 from William Clift, 7 of them drafts, 1796 Oct – 1846 Apr. 7/ 296–297; 8/150–151, 167, 176–177, 184, 249–251, 260, 294–295

Humboldt, Alexander Friedrich Wilhelm Karl Heinrich Von (1769–1859), Germany. 1, 1837 Aug 10. 15/461

Hunter, Miss [?daughter of John]. 2 drafts of William Clift, 1834 Sep - 1835 Apr. 8/128-129

Johns, W J. 1, incomplete, with draft reply, 1825 May 24. 16/165-166

Johnson, James (1777-1845). 1 draft of William Clift, 1825 Jul 19. 8/77

Jones, George. 1 draft of William Clift, ca.1840. 8/193–194

Jones, W, Ireland. 1 to Mrs Latham, 1824 Sep 25. 16/229

Kalinsky, Dr. 1 to Mrs Clift, 1821 Jan 13. 16/311

Kaup, Johann Jacob (1803–1873), Germany. 1, 1838 May. 16/313–314

Kidd, John (1775-1851). 3, with a draft reply, 1822 Dec - 1844 Jul. 8/42; 16/376-380

Knight, Thomas Andrew (1759–1838). 1 to Alexander Walker, copy by Clift, 1837 May 22. 16/454–455

Langstaff, Francis. 1, 1842 Oct 4. 17/99-100

Laurillard, Charles Leopold (1783–1853), France. 3, with draft replies, 1822 Oct – 1826 Sep. 8/36, 90; 17/186–191

Lauth, E, France. 1, 1829 Mar 16. 17/214

Lawrence, Sir William (1783–1867). 1, with draft reply, 1846 Jan – Feb. 8/145–146; 17/184–185 Leach, William Elford (1790–1836), England and France. 3, with draft reply, 1817 Apr – 1825 Jun. 8/70; 17/261–266

Lee, Sarah (1791-1856). 2, 1837 Jan and undated. 17/281-283

'Lithotomist'. 2 of William Clift to the Editor of the London Medical Gazette, 1829 Jan 22. 8/105–106

Lyell, Charles (1797-1875). 1 draft of William Clift, 1846 Jul 23. 8/300-301

Macgregor, P. 1 draft of William Clift, 1823 Aug 27. 8/50

Macmurdo, Gilbert, 1 draft of William Clift, 1840 Mar 20, 8/182

Maiden, William. 1 draft of William Clift, 1825 Dec 22. 8/81

Maisonneuve, Madame. 1 draft of William Clift, 1824 May 21, 8/61-62

Maton, William George (1774-1835). 1 to J H Green, undated. 19/64-65

Mayer, Augustus Franz Joseph Carl, Germany. 1, undated. 19/89-90

Meyer, William. 1, 1846 Feb 26. 19/113a

Monro, Alexander (1772–1859), Scotland. 7, 1805 Apr – 1830 Feb. 19/279a-290, 293-294

Muhry, Dr. 1 draft of William Clift, 1845 Jan 18, 8/247

Norris, William (d. 1827). 1, 1824 Jul 18. 20/323

Oakley, J.B. Argentina. 2 to Woodbine Parish, 1830 Sept - Oct. 20/347-350

Owen, Grace (sister of Richard). 2 drafts of William Clift, 1845 Feb 18. 8/252-253

Owen, Richard (1804-1891). 1 draft of William Clift, 1838 Dec 1. 8/165

Owen, William (son of Richard) (b. 1837). 1 from William Clift, 1845 Jul 14. 8/265

Palmer, James Frederick (1804–1871). 1 with draft reply, 1834 Feb – 1837 Feb. 8/155–156; 21/57–58

Parish, Woodbine (1796-1882). 2 drafts of William Clift, 1834 Dec - 1835 Apr. 8/130, 133

Parkinson, John William Keys (b.1785). 1 with 3 drafts, 1833 Oct - 1837 Sep. 8/123-124; 21/136

Paroissien, General. 2, a copy and a draft reply, 1824 Jul - 1825 Jun 24. 8/76; 21/148-152

Parry, Sir William Edward (1790-1855). 1, 1824 Mar 30. 21/147a

Pazos, M. 1 draft of William Clift, 1838 Jan 22. 8/161-162

Peirson, Dr. U S A. 1, 1838 Nov 1. 21/202-203

Pentland, Joseph Barclay (1797-1873), France. 8, 1832 Nov - [1841]. 21/213-224, 232-235, 238-239

Percy, John (1817-1889). 1, 1841 Dec 15. 21/188

Raffles, Sir Thomas Stamford (1781-1826). 1, undated. 22/40

Rang. 1, 1841 Sep 13. 22/113

Rees, William. 2, 1835 Aug – 1839 Oct. 22/198–200

Roche, James (1770-1853). 1 draft of William Clift, 1833 Sep 4. 8/120-121

Royal Society, Secretary of. 1 draft of William Clift, 1842 Feb 5. 8/209

Royer, France. 8, with draft replies, 1821 Jul – 1825 Jul. 8/35, 37, 78–79; 22/421–435

St Hilaire, Etienne Geoffroy, France. 1, 1833 May 9. 23/28

Sall, I S see Fall

Savenko. 2 with draft replies, 1821 Jul - 1822 Aug. 8/26-27, 33-34; 23/142a-d

Seal, Mr (librarian). 1, 1848 Sep 30. 8/307

Sedgwick, Adam (1785–1873). 1, 1831 Jan 31. 23/234–235

Sharpie, Dr. 1 draft of William Clift, 1841 Sep 4. 8/200-201

Smith, Charles Hamilton (1776-1859). 1, 1841 Aug 7. 24/143-144

Smith, John Pye (1774-1851). 1, 1841 Nov 15. 24/126

Soemmerung, Samuel Thomas von (1755–1830), France. 1 to Georges Cuvier, 1822 Jun 10. 24/226–227

South, John Flint (1797–1882). 4, 1830 Apr – 1843 Jul and undated. 24/253–254, 255–256, 261–262, 264–265

Sowerby, George Brettingham (1788-1854). 1, 1830 May 6. 24/277

Stanley, Edward (1793-1862). 1, 1833 Jul 19. 24/320

Stevenson, John B, France. 1, [1821 Jul]. 22/422

Stoeber, Victor, France. 1, 1829 Mar. 24/354-355

Stutchbury, Samuel (?1798–1859). 1 with draft reply, 1828 Sep 6. 25/226–27

Temminck, Conrad Jacob (1770-1858). 1 draft of William Clift, 1830 May 15. 8/115

Thompson, John, Scotland. 1, 1822 May 28. 8/28-29

Thomson, Allen (1809–1884), Scotland, 1, 1842 Aug 13, 25/143–144

Timm, I [solicitor]. 1 draft of William Clift, 1846 Nov 21. 8/302

Tracey, Mr. 1 draft of William Clift, 1827 May 28. 8/95

Tronsson, Monsieur. 1 draft of William Clift with a translation into French, 1824 May 26. 8/63–66, see also 8/75

Turner, Gurney. 1, ?1835 Nov 3. 25/231

Verreaux, Monsieur, 1 draft of William Clift, 1836 Feb 1, 8/149

Vigors, Nicholas Aylward (1785–1840). 1 draft of William Clift, 1829 Jan 2. 8/104

Warburton, Dr. 3 drafts of William Clift, 1839 Jul - 1840 Jun. 8/171-172, 183

Warburton, Thomas. 1 draft of William Clift, 1840 Mar 10. 8/180

Wardrop, James (1782–1859). 1 draft of William Clift, 1825 Sep 9. 8/80

Warren, John C. 1, 1845 Sep 20. 26/147

Webster, Thomas (1772–1844). 3, 1824 Feb – Apr and undated. 26/245–250

White, Anthony (1782-1849). 1 to Anthony Carlisle, 1821 Feb 3. 26/306

Wilkins, J. W. 1 draft of William Clift, 1845 Oct 18. 8/284

Wilkinson, C B. 1, 1842 Oct 12, 27/13-14

Winslow, Charles Frederick (1811-1877). 1, 1838 Jan 28. 27/102-103

Woodward, Samuel Pickworth (1821-1865). 1 sketch, 1842 Feb 4. 27/196-197

Yarrell, William (1784–1856). 1, 1829 Jul 19. 27/260–261

### MANUSCRIPTS BY CLIFT

[after 1802]. [Drawings of the reproductive organs of the hen and of the development of its egg, with notes]

8 leaves and 17 art originals; 21 cms. Holograph. OC90.2/84-105

The drawings of the egg are 'after Rymsdyke'.

1819 Oct. Last will and testament

2 leaves, 22 cms. Holograph. OC62.8/6-7

Clift made this will just before leaving England for Paris.

[182–]. [Statement of the curators to the Board of Trustees of the Royal College of Surgeons] 2 leaves; 22 cms. Ms. OC90.1a/35–36

1820 Oct. Dimension, with sketches of the feet, of a tapir

2 leaves and 1 art original; 39 cms. Holograph. OC59.2/35-36

1825 Dec. Dimensions of the largest hippopotamus skull in the Hunterian Collection

1 leaf; 23 cms. Holograph. OC63/58

1826. Sketches from the diagrams. Nervous system reptiles.

4 leaves; 20 cms. Art originals. OC38.1(2)

[ca. 1831]. [A list of] Sir Everard Home's papers in the Philosophical Transactions 9 leaves; 32 cms. Holograph. OC63/106

1832, Jun 1. Account of the discovery of the remains of several skeletons of the Mastodon [deleted] i.e. (Megatherium) in the Province of Buenos Ayres in South America. by Woodbine Parish, Esq. 12 leaves; 37 cms and smaller. Ms (transcript) by Clift. L. Mss CLI

1836. Memoranda relating to the sale of old and duplicate specimens of natural history and anatomical articles by the Trustees of the British Museum to the Royal College of Surgeons in London in the year 1809

12 leaves; 32 cms. Holograph. L Mss CLI

1840 Sep. [Notes and transcript on the lunar rainbow]

1 leaf; 22 cms. Holograph. OC62.8/190

1840 Oct. [On the mermaid exhibited in St James' Street, London, in 182-]

1 leaf; 23 cms. Holograph. OC62.8/39

Includes a sketch by Robert Hills.

1841 May. On the cure of hydrocoele by John Hunter

2 leaves; 23 cms. Ms (transcript) by William Clift. OC62.8/207-208

1843 Oct. Report on Mr Owen's paper on the Dinornis

1 leaf; 25 cms. Holograph. OC62. suppl 2/18

1846 Apr. [Note on John Hunter's manuscript on 'The Venereal Disease']

1 leaf: 19 cms. Holograph. OC62.8/293

### OTHER MANUSCRIPTS HELD BY CLIFT

Ballard, E.G.

1836 Sep. Prospectus and plan of an anatomical drawing academy

2 leaves; 32 cms. Holograph. OC62.2/100-101

Brodie, Sir Benjamin Collins

[after 1815]. On muscle fibre

10 leaves; 26 cms. Ms (transcript) possibly by William Home Clift. L Mss CLI

Carlisle, Sir Anthony

1802. Continuation of . . . . Observations on the natural history of birds eggs

9 leaves and 1 art original; 30 cms and smaller. ?Holograph. OC59.2/25-33

Clift, William Home

1829 Mar. Birds hearts – structure of valves

4 leaves; 32 cms and smaller. Holograph. OC59.2/37-40

Clift, William Home

1831. [On the dissection of a marine mammal]

5 leaves: 32 cms. Holograph. L Mss CLI

Henderson, B C

[18—]. Notes relating to some of the anatomical preparations presented to the Museum of the Royal

College of Surgeons by B C Henderson

1 leaf; 22 cms. Holograph. OC62.15/51

Hunter, John

[after 1834]. Copy of Mr Hunter's MSS account of the American Siren of Linnaeus

8 leaves; 32 cms. Ms (transcript). L Mss CLI

[Hunter, John]

[17—]. [On John Hunter's dispute with Mr Hewson]

2 leaves; 19 cms. Holograph. OC62.15/470a

[Hunter, John]

[17—]. Of the pudenda

1 leaf; 31 cms. Holograph. OC62.15/470

Lay, G Tradescant

1828 Nov. [On Pteropus, the fruit bat]

2 leaves; 32 cms. Holograph. OC62.17/224

Miller, John Samuel

[ca. 1830]. Observations on the great Irish elk

9 leaves; 28 cms. Holograph. OC59.2/182–190

Sent to Clift by W. Hetling in 1831

Owen, Richard

1838 Dec. Notice of an extinct quadruped found . . . in the province of Buenos Ayres in South America

5 leaves and 2 art originals; 32 cms and smaller. Ms (transcripts) by William Clift. OC78 See Owen's paper in *Proceedings of the Geological Society of London* 3: 108–113, 1839. The art originals are by Nicolas Descalzi

Paraplegia

[18—]. [On a case of paraplegia] 3 leaves: 27 cms. Ms. OC90.1c/48–50

Savage, Thomas S

1842 Jun. Notes &c with facts illustrative of the habits of the Troglodytes niger; or black orang of Western Africa

10 leaves; 32 cms. Ms (transcript) by William Clift. OC59.2/206–215 Apparently published in *Boston Journal of Natural History* 4, 1844.

Thompson, John Vaughan

1835. An account of the metamorphosis of cirripedes, with a letter of transmittal, and notes by R Owen

5 leaves; 32 cms. Ms (transcript) by William Clift. OC90.1c/43–47 Submitted as a prize essay for the Royal Medal of the Royal Society

### **PORTRAITS**

Clift, William Home

[after 1821]. Undutiful sketch by W. H. Clift, of his father, Wm. Clift, F.R.S.

1 leaf; 26 cms. Art original. OC62.8/310a

A caricature in pen and ink, showing Clift carrying a large tray of bones.

## Sir Everard Home

Everard Home (1756–1832) was the student and assistant of his brother-in-law John Hunter (1728–1793), and later his executor. He was skilled at dissection, and published many papers on comparative anatomy. He destroyed many of John Hunter's manuscripts, and the suspicion remains that he was plagiarising Hunter's unpublished work. He was closely associated with the Royal College of Surgeons for much of his life. These manuscripts either came to Owen with the Clift papers that he purchased, or else were taken from the College when he moved to the British Museum in 1854.

## CORRESPONDENCE

The surviving correspondence of Everard Home is bound in amongst the correspondence of Richard Owen in OC62 and among the manuscripts in OC63. The entries follow the conventions used in the list of Owen letters.

Bauer, Franz Andreas (1758–1840). 9, 1819 Oct – 1831 Nov. 2/360–361; OC63/81, 83–86 Belfour, Edmund (1790–1865). 3 from Everard Home, copies, 1824 Mar – Apr. OC90.1(1)/37 Bell, Sir Charles (1774–1842). 1 ca. 1821. 3/77–82

Board of Agriculture. 1 draft of Everard Home, undated, with sketch. OC63/40-41

Brookes, Joshua (1761-1833). 1, undated. 6/29

Brownrigg, Sophia. 1, ?1824. OC63/35-36

Busby, J. 1, 1831 Jul 25. OC63/78

Busby, Thomas, Australia. 2 to Henry Dumaresq, 1830 Sep - 1831 Jan. OC63/74, 76

Combe, Taylor (1774–1826), 1, 1817 Sep 13, 8/368–369

Cross, Edward. 2, [1825] - 1827 Sep. OC63/38, 59

Cunningham, Mr. 1, 1831 Oct 30. OC63/82

Dumaresq, Henry, Australia, 1, 1831 Feb 17, OC63/77

Duvernoy, Georges Louis (1777-1855), France. 1, 1814 Oct 13. OC63/70

Granville, Augustus Bozzi (1783-1872). 1, undated. OC63/27-28

Guilding, Lansdown (?1797-1831), St Vincent. 1, 1825 Aug 17. OC63/29

Hatchett, Charles (1765-1847). 1, 1814 Nov 3. 14/484-485

Hill, Rt. Australia, 1 to Henry Dumaresq, 1830 Oct 16, OC63/75

Home, James, Scotland. 1, 1813 Apr 13. OC63/55

Huger, Frs K, U S A. 1, 1819 Feb 1. OC63/12

Hughes, Rev M. 1, 1828 Jan 28. OC63/24

Jacobson, Ludwig, Denmark. 1 with printed paper, 1821 Sept 20. OC63/88-89

King, Phillip Parker (1793–1856), Brazil. 1, 1828 Dec 14. OC63/57

Long, William (ca 1749–1818), 1, 1813 Jul 29, OC63/14

Nicol, George. 1, 1814 Oct 29. 15/327

Physick, Philip Squire. 1, copy, 1802 Mar 23. 21/337-338

Richardson, W., Australia. 1 to Henry Dumaresq, 1830 Sep 28. OC63/73

Roberts, G L. 1, 1825 May 20, 22/322

Roget, Peter Mark (1779-1869). 1 to Charles Hatchett, 1832 May 19. OC63/87

Rumball, John. 1 incomplete, to John Hunter, 1793 Aug 4. 22/446

Schreiber, Karl Franz Anton von, Austria. 1, 1819 Mar 20. OC63/52-53

Scoresby, William (1787/9–1857). 7, 1809 Dec – 1819 Apr; 2 to Sir Joseph Banks, 1809 Oct. 23/228–229; OC63/2–3, 5–9

Smith, Andrew (1797–1872), South Africa. 5, 1825 Dec – 1828 Jul. OC63/64–67; L Handwriting Cat. SMI

Stutchbury, James. 1, 1827 Jul 16. OC63/51

Vincent, William. 1, undated. OC63/54

Warren, Pelham, 1, 1812 Nov 4, 26/145-146

Whistler, Thomas L, Ireland. 1 to James Pitcairn, 1813 Apr 25. OC63/45-46

Young, George (1777-1848). 1, 1821 Oct 25. 27/289

### MANUSCRIPTS BY HOME

1794 Mar. The appearance found in the livers of two sheep marked No 4 and No 8, examined on the 30th of March 1794

2 leaves; 32 cms. Ms (transcript). OC63/39

[18—]. Larynx of rhinoceros

1 leaf; 33 cms. Holograph. OC90.1/83

[18—]. [Notes on the eye and optic nerve, and on the lungs]

8 leaves; 25 cms. OC63/105

[18—]. [note on a frozen mammoth from Siberia]

1 leaf; 23 cms. Holograph. OC63/18

Knight, Thomas Andrew

[180-]. On the circulation of the sap

2 leaves; 23 cms. Ms (transcript) by Home. OC63/21.

Knight read papers to the Royal Society on the movement of sap between 1800 and 1806.

[after 1808]. [Summary of the arrangement of preparations in the Hunterian Museum of the Royal College of Surgeons]

5 leaves; 23 cms. Holograph. OC59.2/86-90

1811 Feb. [Examination of] three male pheasants of Sir Joseph Banks

2 leaves; 20 cms. Holograph. OC63/61

[after 1811]. [Table showing the length of intestines in different animals]

2 leaves; 23 cms. ?Holograph. OC63/37

[after 1811]. A microscopical examination of the internal parts of the eye, with a view to determine the means by which it adjusts itself to see near objects

7 leaves; 25 cms. Holograph. OC63/104

Apparently an unpublished Royal Society Croonian Lecture

1812 Mar. [Analysis of whalebone hair and of the byssus of the mussel]

2 leaves; 24 cms. Holograph. OC63/10

1813 May. Royal College of Surgeons museums

2 leaves; 30cms. Holograph. OC90.1/14-14a

A brief synopsis of the contents of the Museum

[after 1821]. On the provisions of nature for defending animals from cold

7 leaves; 25 cms. Holograph. OC63/22

Read to the Royal Society but withdrawn from publication.

[after 1825]. Vermities Lanocepholus, n. spec., but perhaps described by Adanson

4 leaves; 25 cms. Holograph. OC63/32

1831. Facts advanced in refutation of the assertion that ye female Ornithorhynchus Paradoxus has mammae

7 leaves; 26 cms. Holograph. OC63/79

Read to the Royal Society in November 1831 and withdrawn from publication.

### OTHER MANUSCRIPTS HELD BY HOME

Andries, Mr

[after 1799]. [The experimental gelding of a buck]

2 leaves; 21 cms. Holograph. OC63/44

Arran, Lord

[after 1824]. On pearls in freshwater mussels

1 leaf; 25 cms. Holograph. OC63/34

Home wrote on the production and formation of pearls in Philosophical Transactions for 1826.

Banks, Sir Joseph

1813. Fallow deer

4 leaves; 23 cms. Ms (transcript) by E Maiden. OC63/43

Bauer, Franz Andreas

1820 Jan. Microscopical observations on the human brain

12 leaves; 23 cms. Holograph. OC63/98-100

Cited in Home's paper on the human brain, Philosophical Transactions 114, p.3, 1824.

Bell, Mr (a surgeon)

[ca. 1807]. [Description of the wombat] 5 leaves: 25 cms. Holograph. OC63/69

Partly published by Home in Philosophical Transactions 98, pp. 305-306, 1808

Braddick, John

1827 Jul. [Drawings of fossil teeth and bones from Brought Mound near Maidstone, Kent] 1 art original; 32 cms. Holograph. OC63/19

Brown, Robert (of the British Museum)

[18—]. [On drying plant specimens]

1 leaf; 25 cms. Holograph. OC63/103

Cunningham, Allen

[after 1826]. Memorandum to accompany the spec. of a native skin for Sir Evd. Home Bart. 2 leaves; 33 cms. Holograph. OC63/72

Echidna

[after 1827]. [Echidna: description of] 2 leaves; 22 cms. Ms. OC63/71

In French.

Exmouth

1812, Feb. [Exmouth: weather record for Beacon Hill, 1811–1812]

1 leaf; 23 cms. Ms. OC63/101a

French, Le Poer

1813 Apr. Answers to queries relative to the sunfish of the west of Ireland, sent by Sir Joseph Banks Bart.

2 leaves; 33 cms. Holograph. OC63/46

Geese

[18—]. [Geese: enlarging their livers] 9 leaves; 22 cms. Ms. OC63/62

Holywell

[18—]. [Holywell waters, Malvern: notes on]

2 leaves; 17 cms. Ms. OC63/15-16

Hunter, John

[17—]. [Instances of thirst being quenched by water absorbed through the skin]

2 leaves; 21 cms. Holograph. OC63/26

Kater, Captain

[18—]. Method of measuring the size of a globule of blood

2 leaves; 19 cms. Holograph. OC63/92

Kirkland, William

1795. [On mammoth bones in the possession of Caspar Wistar of Philadelphia]

1 leaf; 32 cms. Holograph. OC63/17

McCausland, R

[ca. 1800]. Account of an earthy substance found near the Falls of Niagara and vulgarly called the spray of the Falls

18 leaves; 25 cms. Holograph. OC63/11

Mascall, Leonard

[after 1814]. The order of carving poultry in England

2 leaves; 32 cms. Ms (transcript) by Roger Wilbraham. OC63/63

The text was first published in 1581. 'Carving' here means castrating.

Murdoch, Thomas

1821. [On the introduction of venereal disease into Europe]

4 leaves; 33 cms. Holograph. OC63/20

Nicoll, Alex

1827 Sep. [Discussion of a passage from the Book of Leviticus on animals that are an abomination] 1 leaf: 23 cms. Holograph. OC63/25

[Paterson, William]

1804 Aug. Some account of the koala

2 leaves; 24 cms. Holograph. OC63/68

Partly published by Home in *Philosophical Transactions* 98, pp. 305–306, 1808

Salamander

[18—]. [Salamander and axolotl: description of plates illustrating their anatomy]

2 leaves; 25 cms. Ms. OC63/91

In French.

[Solander, Daniel]

[17—]. Rules for collecting and preserving specimens of plants

4 leaves: 33 cms. Holograph. OC63/102

Tessier, Charles

[after 1820]. [Extract of a memoir on the gestation periods of different animals]

3 leaves; 25 cms. Ms (transcript). OC63/90

Published in Bulletin des Sciences par la Societe Philomathique, 1797

Tilesius von Tilenau, W G

[18—]. [An abstract of the views of Tilesius on certain marine mollusca]

4 leaves: 20 cms. Ms. OC63/30-31

Waddell, Miss

1811 – 1815. [Description of development of a shark's egg, with drawings]

3 leaves and 1 art original; 23 cms. Holograph. OC63/48-50

[Wood, Mr]

[17—]. An enquiry into the medicinal properties of the hof waters in Saint Michaels, one of the Western Islands. . .

4 leaves; 31 cms. Holograph. OC63/14

The item bears an endorsement in the hand of John Hunter.

### LECTURE NOTES

The holographs of parts of two courses of lectures on comparative anatomy delivered by Everard Home at the Royal College of Surgeons in 1810 and 1813 are preserved in OC63.2. The complete lectures are published in *Lectures on comparative anatomy; in which are explained the preparations in the Hunterian collection* by Sir Everard Home. Two volumes, G and W Nicol, London. The contents of OC63.2 comprises:

First course, 1810,

lecture IX, on the stomach. OC63a/6–20

lecture X, on the stomach. OC63a/21-22

lecture XII, of the complex teeth. OC63a/23-36

Second course, 1813,

lecture III, on the stomachs of birds. OC63a/37-64

lecture IV, on the digestive organs of birds that live principally on vegetable food. OC63a/65–93

lecture IV emendations, partly in the hand of William Clift. OC63a/94–105

lecture VI, on the stomachs of cold bloodied animals and fishes. OC63a/106–133 lecture VII, on the stomachs of truly amphibious animals and fishes. OC63a/134–162 lecture VIII, on the digestive organs of worms and insects, with a note in the hand of Francis Beaufort, 1808. OC63a/163–204

### DRAWINGS

A collection of 147 drawings and watercolour paintings prepared to illustrate the Home's papers and memoirs is preserved in a single volume in the Owen Collection, OC71. The pictures illustrate anatomical features of a wide range of both vertebrate and invertebrate animals. Most were prepared by William Clift between 1800 and about 1820, but in addition there are two paintings by Sydney Parkinson dated 6 and 8 September 1768, 16 by Franz Bauer, and 24 by Mrs Marsh. Many of the paintings and drawings were engraved by J. Basire and published in *Philosophical Transactions of the Royal Society*, and again in Home's *Lectures on comparative anatomy*, 6 volumes, 1814–1828, London.

## A summary list of the Owen Collection

Items in this list are arranged in order of their General Library press mark. In its full form the press mark is prefixed by the letters OC.

- 1. Monotremata and Marsupialia, from Todd's Cyclopaedia, 1841. Interleaved and annotated.
- 2. Aneurism. Transactions of the Medico-Chirurgical Society 6, 1830. No annotations.
- 3. Aves, from Todd's Cyclopaedia, 1835. Interleaved and annotated.
- 4. Offprints of twelve papers from *Transactions of the Geological Society of London, 1838–1845,* with a printed titlepage. No annotations.
- 5. Offprints of fifteen papers by Owen and others from *Transactions of the Zoological Society of London* and the *Philosophical Transactions of the Royal Society,* 1832–1835. Few annotations.
- 6. Odontography. Two volumes. London. 1840–45. Annotations.
- 7. Lectures on the Anatomy of the invertebrates. London, 1843. Few annotations.
- 8. Lectures on the anatomy of the invertebrates. Second edition, 1855. Annotated.
- 9.1. British fossil mammals and birds. London, 1846. Annotated.
- 9.2. Ditto, annotated.
- 10.1-3. Anatomy of vertebrates. 3 vols. London, 1866-68. Interleaved and annotated.
- 10.4–5. Ditto, vols 2 and 3 only, annotated.
- 11. Principes d'osteologie comparee. Paris, 1865. Interleaved and annotated.
- 12. Palaeontology Second edition. Edinburgh, 1861. Interleaved and annotated.
- 13. Lectures on the anatomy of the invertebrates. London, 1843. Annotated.
- 14. Reports on British fossil reptiles, parts 1 and 2. Reports of British Association for the Advancement of Science, 1839 [and 1840]. Interleaved and annotated.
- 15.1. On the extent and aims of a National Museum of Natural History. London, 1862. Annotated.
- 15.2. Ditto. No annotations.
- 15.3. Ditto, second edition, 1862. No annotations.

- 16. Antiquity of Man. London, 1885. Few annotations.
- 17.1. On parthanogenesis. London, 1849. Interleaved and annotated.
- 17.2. Ditto, few annotations.
- 18.1. On the nature of limbs. London, 1849. Interleaved and annotated
- 18.2. Ditto, few annotations.
- 19.1. Experimental physiology, its benefits to Mankind. London, 1882. Few annotations.
- 19.2. Ditto, no annotations.
- 20. Diary, 1869 and 1872.
- 21. Notebook, 1833.
- 22. Manual of zoology, from The Admiralty manual. London, 1859. No annotations.
- 23. Offprints of Owen's papers from the Annals and Magazine of Natural History and Quarterly Journal of the Geological Society, 1844–1879. Few annotations.
- 24. Memoir of Professor Owen, from Men of Eminence, 1868. Interleaved and annotated.
- 25. Fifteen pocket notebooks, 1830–1839.
- 26. Description of skeleton of extinct giant sloth. London, 1842. Interleaved and annotated.
- 27. Zoology of the voyage of the Beagle, part 1. London, 1840. Annotated.
- 28. Odontography. 5 volumes. London, 1840–1845. Annotated.
- 29. British fossil reptiles. 3 volumes. 1849–1884. No annotations.
- 30. Memoir on the gorilla. London, 1865. No annotations.
- 31.1. Monograph on the Aye-Aye London, 1868. Interleaved and annotated.
- 31.2. Ditto, no annotations.
- 32. Fossil Reptilia of South Africa 2 volumes. London, 1876. Few annotations.
- 33.1. Memoir on the pearly nautilus, author's manuscript drafts.
- 33.2. Memoir on the pearly Nautilus London, 1832. Interleaved and annotated.
- 33.3. Ditto, no annotations.
- 34. Catalogue of the Museum of the Royal College of Surgeons, part IV, fasc 1. London, 1830. Few annotations.
- 35. First report of the Commissioners, Metropolitan Sanitary Commission. London, 1847. No annotations.
- 36. Sea serpent scrapbook, 1836–1912.
- 37. Offprints of 83 of Owen's papers papers from the *Philosophical Transactions of the Royal Society* etc, 1838–1886, 5 volumes. Few annotations.
- 38. Manuscript notes and synopses of Hunterian and other lectures, 1828-1864, 3 volumes.
- 39. Corrected proofs of reviews by Owen published in *Quarterly Review* and elsewhere, 1847–1885.
- 40. Pictorial Museum of animated nature. 2 vols. London, undated.
- 41. Animal oeconomy by J Hunter, edited by Owen, 2 vols, 1837. No annotations.
- 42. Monograph of fossil Reptilia of the Wealden clays. London, 1853. No annotations.

- 43. Monograph of the fossil Reptilia of the Cretaceous formations. London, 1851. No annotations.
- 44. Monograph on the fossil Reptilia of the London Clay. London, 1849. No annotations.
- 45. Monograph of the fossil Reptilia from Oolitic formations. London, 1861. No annotations.
- 46. Monograph of the fossil Mammalia of the Mesozoic formations London, 1871. No annotations.
- 47. Monograph on the fossil Reptilia of the Mesozoic formations London, 1875. Few annotations.
- 48.1. Monograph of British fossil Cetacea London, 1870. No annotations.
- 48.2. Ditto.
- 49. Monograph on the Reptilia from the Kimmeridge Clay and Portland Stone. London, 1869. Appotated.
- 50. Observations on geology by J Hunter, edited by Owen, 1859. Annotated.
- 51. South African fossils collected by Prince Alfred *Philosophical Transactions of the Royal Society*, 1860. No annotations.
- 52.1. Contributions to the history of British fossil mammals. London, 1848. Few annotations.
- 52.2. Ditto.
- 53. Zoology of Captain Beechey's voyage. London, 1839. No annotations.
- 54. Memoir on the Megatherium. London, 1860. Annotated.
- 55. Memoir on the dodo. London, 1866. Interleaved and annotated.
- 56. Anatomy of the king crab. London, 1873. Few annotations.
- 57. Uber die Bedeutung der Schadelknochen, by Oken, 1807. Few annotations.
- 58. A treatyse of fysshynge wyth an angle by Dame Juliana Berners. London, 1880. No annotation.
- 59. Twenty-eight manuscripts on natural history by Richard Owen and others, 2 volumes.
- 60. Fossil remains of the extinct Mammalia of Australia. 2 vols. London, 1877. No annotation.
- 61. Memoir on the extinct wingless birds of New Zealand. 2 vols. London, 1878. Annotated.
- 62. Correspondence of Richard Owen and William Clift, 27 volumes and three supplementary volumes.
- 63.1. Manuscripts and correspondence of Sir Everard Home, 1782–1832.
- 63.2. Manuscript lecture notes of Sir Everard Home, 1810-1813.
- 64. General guide to the British Museum (Natural History). London, 1889. Few annotations.
- 65. YMCA lecture on the power of God, 1864 (xerox copy)
- 66. List of orders and medals of R Owen (typescript, 1972)
- 67. Survey of life and work of Owen by D L Ross, 1972 (unpublished typescript)
- 68. Two papers by Owen from Fraser's Magazine, 1872 (typescript copies)
- 69. Armorial bearings of Richard Owen, prepared by The College of Arms, 1973.
- 70. Only an old chair by R. A. Goodsir. Edinburgh, 1884. No annotation.
- 71. Drawings and paintings by Clift and others to illustrate the papers of Sir Everard Home, 1768–1825.
- 72. Printing types by Harrison & Sons. London, 1889. No annotation.

- 73. State of the rooms of the Department of Natural History. Manuscript, 1824.
- 74. Diplomas and certificates of Sir Richard Owen.
- 75. On Dinornis. Transactions of the Zoological Society of London, 1871. No annotation.
- 76. Manuscript document appointing Daniel Solander to the British Museum, 1765
- 77. Ospovat, D., 1976. The influence of Karl Ernst von Baer's embryology, 1828–1859 Journal of the History of Biology 9.
- 78. Manuscript notes on Placuna placenta and Glyptodon, 1838 and undated.
- 79. Report to Trustees on gift of Owen's books, 1915
- 80. Bibliography of Owen by C D Sherborn, proof copy, 1893
- 81. Letters of B. B. Woodward concerning the Owen collection of medals and portraits, 1913–1920.
- 82. Letters of A. J. E. Cave about the Owen drawings, 1979
- 83. Letter of J. Phillips, 1857, offering Owen presidency of BAAS for 1858.
- 84.1. Notes by Owen on his family, undated.
- 84.2. Music written out by Caroline Amelia Clift.
- 85. Owen Memorial Catalogue by C D Sherborn, 1919
- 86. An account of the life and achievements of R Owen by J Dobson, 1981 (Typescript)
- 87. The Richard Owen correspondence a calendar and an introductory essay by J Gruber (Typescript)
- 88. Portraits of Richard Owen, mounted in an album
- 89. Drawings of the nervous system of bivalves, ?1834
- 90. Scientific manuscripts of Richard Owen, newscuttings and other items 1830–1878, 4 vols.
- 91. The Owen collection of palaeontological and zoological drawings.
- 92. Ingles, J. M. and Sawyer, F. C., 1979. A catalogue of the Richard Owen collection of palaeontological and zoological drawings in the British Museum (Natural History). (Bulletin of the British Museum (Natural History), Historical Series), 6(5): 109–197
- 93. Wollaston. T. V., 1864 Catalogue of the coleopterous insects of the Canaries. British Museum; London.
- 94. Notes on Owen papers in Peterborough Museum
- 95. Sir Richard Owen portraits in Lancaster City Museum, 1989
- 96. Photocopies of Owen letters in the American Philosophical Society
- 97. 82 woodblocks intended to illustrate 'Fossil Osteology'

# Owen letters elsewhere in The Natural History Museum

### MUSEUM ARCHIVES

Principal Librarian's Correspondence Letters, memoranda and reports by Owen, 1873–1883 (DF930) Official Papers of the Superintendent

Letters, memoranda and minutes addressed to Owen by the Principal Librarian and the Museum Secretary, 5 volumes, 1856–1883 (DF931)

Mineralogy Department Correspondence 1 letter to M H N Story-Maskelyne, 1869 (DF1/11)

Keeper of Mineralogy's Internal Correspondence 7 letters to M H N Story-Maskelyne, 1858–1861 (DF15)

Palaeontology Department correspondence

9 letters to GR Waterhouse, 1855–1873. Letters from SH Beckles, 1871; WR Brodie, 1861; AH Cosens, 1868; R Daintree, 1871; PM de G Egerton, 1871; Earl of Enniskillen, 1866–1874; Eudes Deslongchamps, 1866; J von Haast, 1873; J S Henslow, 1860; M Johnson, 1864; C Lyell, 1865; R I Murchison, 1860–1861; J R Shopland, 1873; E P Wright, 1871, and others (DF100). These letters were addressed to Owen and presumably passed to GR Waterhouse for action.

Zoology Department Correspondence 157 letters to Dr A Gunther and J E Gray, 1864–1887 (DF200) 2 letters to J E Gray, 1848 (DF205/7)

Botany Department Correspondence 4 letters to I I Bennett, 1862–1869 (DF400)

Keeper of Botany's Papers 20 letters to W Carruthers, 1870–1888 (DF409/6)

### GENERAL LIBRARY MANUSCRIPTS

1 letter to Mr Eyton, 1875 (L.Mss BLO)

2 letters to F Day, 1874–1876; 1 to P B Du Chaillu, 1859; 9 to J E Gray, 1861–1874; and 27 to Dr A Gunther, 1861–1880 (L.Mss GUN)

1 letter to Trustees of British Museum, 1869, concerning George Gray (L.Mss GRA)

### PALAEONTOLOGY LIBRARY MANUSCRIPTS

9 letters to W H Shrubsole, 1877–1885 (P.Mss SHR)

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