To Kees,
with best wishes,
Peter

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History in the service of taxonomy: cultural environment of fishes*

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When I began my ichthyological career, as a fishery biologist in Kenya some twenty-five years ago, I was quite innocent of the niceties of taxonomy and its nomenclature. As a field worker I wanted proper names for the fishes I was calling Species A and Species B. As time went by, however, I began to realize that the scientific names of species did not always have the straightforward one-to-one relationship to reality that I had first imagined. On the one hand, species are subject to taxonomic judgements, while on the other names are dependent on a set of nomenclatural rules that can be baffling, or indeed quite irritating, to those for whom the biology of the species is their primary concern. In the eyes of many fishery biologists, taxonomy is carried out in some far distant museum by people determined to keep changing names.

After some years in the field, however, I came to work in the British Museum (Natural History) and because I chose to work on a group, the clupeoid fishes, with an enormously tangled taxonomy and nomenclature, I was obliged to study the problem with more care. It became apparent that taxonomy and nomenclature work hand in hand in the exploration of phylogenetic relationships. Nomenclature is a retrieval system, by no means perfect but the best that we have so far devised. It enables us to grasp very quickly the taxonomic statements of previous workers and to express our own conclusions. Its value depends greatly on the strict application of the Zoological and Botanical Codes, whose fundamental tenet is the 'Law of Priority'. In effect, this cornerstone sternly forbids any taxonomist to overlook any name, any publication (however obscure), any dating of a work, any specimen (extant or not), any illustration (published or not), in a word any indication that may have nomenclatural relevance to the taxon in question since the publication of the 10th edition of the 'Systema naturae' by Linnaeus in 1758 (or his 'Species plantarum' of 1753).

This means that the taxonomist must be prepared to come to grips with over two hundred years of taxonomic history. Worse, he must recognise that Linnaeus supplied names but that his 'indications' often reach back in a critical manner to specimens, descriptions or illustrations from the 17th century. On occasions, therefore, the taxonomist can find himself in the rather quaint world of natural philosophy of the time of Louis XIV or Charles II.

Some taxonomists dismiss this aspect of their discipline as mere pedantry, arguing that taxonomy is the theory and practice of classifying organisms and not just the winnowing of husks from dry synonymies. They also point out that the Zoological and Botanical Codes provide adequate means for squashing awkward names or for nominating new specimens to replace lost or nonexistent types. This is perfectly true, but the suppression of a name or any overriding of a rule is a matter that is voted on by the Commissioners after lengthy and published discussion. Without such a safeguard, our nomenclature (and thus our retrieval system) could slip back into the chaos of individual decisions on the correctness of a name. The Commissioners, as well as the many taxonomists who are prepared to argue over particular cases, are well aware of the general value of the rules and do not take kindly to applications that are not based on a proper investigation of the problem, for more often than not a nomenclatural tangle can be straightened out by applying the existing rules rather than by breaking them.

On reflection, even the most careless of workers will admit to the frustration of a body of data that cannot be tied to a particular taxon because of faulty nomenclature. In fact, we have a direct responsibility

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to bring our nomenclature into the one-to-one relationship with taxa that we know to be possible. One means to this end is sound taxonomy, but the other and equally important means is the rigorous use of our nomenclatural rules. Thus, because of the 'Law of Priority', the conscientious taxonomist cannot entirely escape his historical roots. Some taxonomists, like myself, frankly enjoy historical excursions, while for others it is a painful duty. But for all those who have undertaken this kind of work there is both the satisfaction of having solved a particular puzzle, and the rewarding sense of continuity with the work of our illustrious or obscure predecessors.

Inevitably, this direct and indeed *obligatory* involvement in history – shared by no other scientific discipline – has bred a rather distinct kind of scholar, quite different from the historian of science. He is preoccupied, not with the grand themes like the origin of the 'Origin' or the resurrection of Aristotle, but with such apparently minor issues as collections, collectors, printing histories of journals and editions, old museum catalogues, letters and fading watercolours. He will cheerfully thumb through eight thousand entries in the Leverian sale catalogue on the chance of locating a Pennant type, or rummage through boxes of dry specimens to wipe the dust from a label scrawled by Daniel Solander two centuries ago: untidy bundles of old letters fill him with delight, while a faintly pencilled date on a drawing can make his day.

What stamps the historical taxonomist is his allegiance to two masters, for his historical work is nothing without the continual stimulus of his commitment to taxonomy. In addition, he is usually hopelessly eclectic, leaping energetically from author to author, from collection to collection, from century to century, content to solve problems of such limited scope that no true historian of science would ever trouble to investigate. While the chase is on, the means become the end, but almost always a goal has been set and once achieved, the taxonomist comes to the fore and the excursion is over. History dissolves, like the memory that it is, into the problems that provoked it.

Because the historical taxonomist is a mongrel, he is apt to be a little accidental, the product of no particular breeding. He arises from the exigencies of his work and is not the result of a special university course. His best training is on the hard ground where taxonomy meets nomenclature and gives rise to a certain kind of anomaly. His position is often a little precarious. His seniors will gladly use his knowledge but not as gladly invest taxonomic funds in what may appear to them a side issue from the main thrust of systematic endeavour. Thus, only one major institution as far as I am aware, the British Museum (Natural History), has a distinct historical series to its bulletins. There is no taxonomic institute with a historical section, although in fact such would probably serve to neutralize the hybrid vigour of the historical taxonomist, for his springboard is the dialectic between science and history. In addition, historical taxonomy is more like a disease than a congenital condition, in the sense that some taxonomists may not catch it at all, others may suffer it only once or twice in their careers, while others again may find it such an affliction that it seriously erodes their taxonomic activities. Nonetheless, these are not full-time historians, bibliographers or curators who dabble in taxonomy, but bona fide taxonomists using some historical knowledge to solve essentially taxonomic/nomenclatural problems.

The problems that force the taxonomist into history are chiefly those of locating type material or dating publications, although the alert taxonomist will often spot the specimens, drawings, descriptions or publications first and, recognising their importance, begin to work out their implications to taxonomy or nomenclature. Simple aims or simple discoveries frequently give rise to secondary goals and elaborate detours, whose necessity is as difficult to justify at the time as any of the winding paths that lead to taxonomic discoveries. There is also a very natural growth in such historical studies, for having finally located a particular type in an obscure collection, it is worthwhile recording other types and to comment on the history of the collection and the activities of the collector. Thus, what began as a mere footnote or discursive paragraph may evolve into a full-scale work, but one for which taxonomists in quite unrelated groups will forever be grateful.

The original sparks, the byways, the tortuous routes and the results achieved by such taxonomic/historical excursions can be illustrated by four of my own studies: the quest for Day, tho' in a prison placed, manatees and mermaids, and the great music find. The first and the last arose quite directly, and with a deceptive innocence, out of the need to establish types and to validate names for certain clupeoid fishes. The other two are less strongly tied to taxonomy and arose from problems generated by other trails. Three were brought to completion, but the final one – an unusual feature in a scholarly investigation – awaits disentanglement from a web of political factors.

The quest for Day

As a part of a general programme to redescribe and assess the types of clupeoid fishes of major authors, I began to work on the Indian species of Francis Day (1829–1889). On the face of it, there appeared to be no real problem. Day had brought his enormous collection of fishes to England, had worked week by week at the British Museum while writing his monumental 'Fishes of India', and had in the last year of his life presented to the British Museum a collection of some five thousand fishes. From among these and from the four hundred specimens that Day had presented in earlier years, Albert Günther had labelled a number as types. However, from a study of the collections of Pieter Bleeker (the only man to amass a collection of fishes larger than that of Day), I remembered that Day as well as Bleeker specimens were in the Australian Museum in Sydney, while my colleague (and later co-author) Purnesh Talwar pointed out that there were nearly four thousand Day fishes in Calcutta. How many more such Day collections existed, and was there a short-cut to deciding where he sent the types of his 328 species?

Fortunately, chance (or serendipity) stepped in. I found that just at this time Dr Ethelwyn Trewavas had located Day's complete library, deposited after his death in the Cheltenham Public Library, and a quick visit revealed a mass of manuscript material (after the librarian had assured me that only printed works were present). At about this same time an art historian friend from Cologne turned out to have a friend in London who I discovered was none other than the greatgrand-daughter-in-law of Francis Day. She revealed that one of Day's grandsons was still alive and that the family had some manuscripts, a portrait, photographs and, of prime importance, various of Day's works which he had annotated as working copies, including an interleaved 'Fishes of India'. For a biographical and taxonomic study, these two collections were critical.

As a result, I found that the original three-page biographical sketch began to evolve into something more like a book, while a quite new light was thrown on the question of Day's types. Perhaps not for the first time in the history of taxonomy it transpired that the selection of repositories for the most important specimens depended not on any scientific or

Fig. 1. Francis Day (1829–1889) in the dress uniform of the Indian Medical Service.

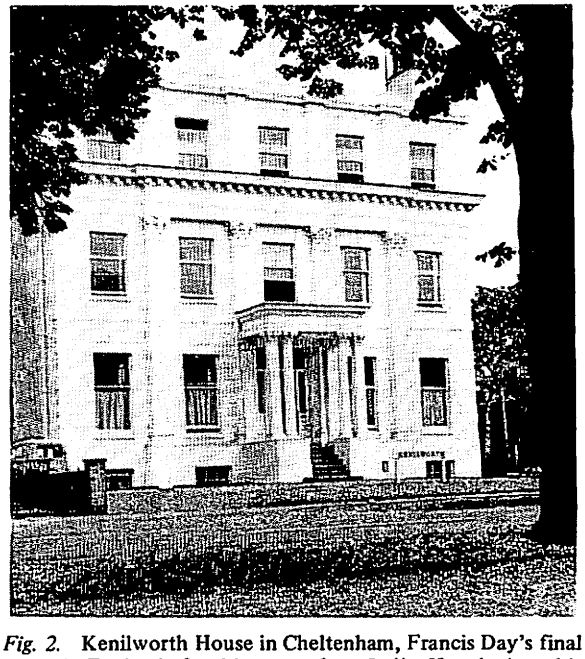

Fig. 2. Kenilworth House in Cheltenham, Francis Day's final home in England after his return from India. Here he kept his collection of some twelve thousand specimens of fishes.

even patriotic judgements, but on a personal animosity, for between Day and Günther there had raged a battle of such intensity over twenty-five years that the five thousand fishes presented to the British Museum in 1889 were merely the left-overs, the remainders after the cream of types and illustrated specimens had been sent to Harvard and to Calcutta, to Berlin, to Leiden, to Paris, to Genoa, to Sydney and to Vienna. This led back to the British Museum (Natural history) and the enormous collection of Günther manuscripts. Among these I found Day's final letter to Günther, written while he was dying of cancer of the stomach. It was a letter of reconciliation, but in it he stated quite clearly 'My type collection of Indian fishes went to Calcutta, No 2 to Sydney, No 3 to Vienna, and Florence, Berlin and Leyden have had large numbers.' Here at last was the solution to the problem of Day's types.

The quest for Day brought out a lot more than just the repositories of his types. It rounded him out as an ichthyologist, showed him to be nearer to our own times as a taxonomist than ever Günther was, and drew from me at least a tremendous admiration for the way that nineteenth century ichthyologists tackled such immensely complex faunas. As a spin-off, so to speak, it threw light on early trout planting experiments and on the documentation of such important museums of the time as the India Museum in London; for me, it also provided an interesting bridge, through Day's grandfather the watercolourist William Day, via Philipe Jacques de Loutherbourg, to William Webber and thus to my earlier studies of the drawings and specimens from Captain Cook's voyages.

Tho' in a prison placed

The second historical excursion illustrates the problem of dating an early published work, although in this case I was also concerned to establish the authorship. It was entered obliquely, through my study of the fate of the zoological specimens from the Cook voyages. This generated an interest in one of the great natural history dealers of the period, George Humphrey (1745?– 1823). According to some authorities, Humphrey had a considerable knowledge of shells and published a curious book, the 'Conchology or natural history of shells'. The book is curious because its parts are completely undated, it ends in mid-sentence, and its author is given merely as 'A Collector'. Although not a work of fundamental importance to molluscan taxonomy, it nevertheless contains illustrations of shells in well-known eighteenth century collections and a number of these were types.

On two occasions Humphrey himself seems to claim authorship, referring to the book as 'HUMPHREY's Conchology' or 'Humph. Conch.' However, some taxonomists have rejected this and have accorded authorship of the 'Conchology' to Emanuel Mendes da Costa (1717–1791), that 'wayward Hebrew genius' as he has been called, who rose to a high position in scientific and antiquarian circles before plummeting to ignomy and disgrace. The literature showed that little had been published on the lives of these two men and it became apparent that the problem would have to be solved from manuscript sources. Surely somewhere there must be a statement by one or other of them, or by a third party, which would clarify the authorship and perhaps help to date the work.

Although Humphrey finds mention in contemporary letters and published works, the sum of information so derived is rather scanty. He was a London dealer in natural history and ethnological objects, with a special interest in shells, he ran his Museum Humfredianum for a year in St. Martin's Lane until forced to sell up in 1779, he catalogued several famous collections, and he published one short paper in the 'Transactions' of the Linnean Society. I could find nothing that would confirm his authorship of the 'Conchology'.

However, it finally proved possible to resolve the problem of authorship, as well as dating, through da Costa alone since there are no less than eleven undeservedly neglected volumes of his correspondence in the British Museum at Bloomsbury, many of the letters being interspersed with drafts of da Costa's replies. A calendar of these letters, with even brief notes of their contents, would be of enormous value to future studies of this period.

Da Costa, who came from a family of Sephardic Jews that settled in England at the end of the 17th century, was apparently destined for a minor legal career but this was overtaken by his interest in natural philosophy, in particular minerals and fossils. He became a member of the Aurelian Society and was elected Fellow of both the Royal Society and the Society of Antiquaries. The letters show that he was in correspondence with many of the leading scientific and literary figures of the day and was clearly popular and well-respected. Linnaeus heaped great praise on his 'History of fossils' (1757) and the Royal Society elected him to the post of Clerk, with special respon-

sibility to collect members' dues.

So far, it had been a story of success, but the Minute Book of the Royal Society for 1767–1768 spells out da Costa's equally spectacular downfall. His passion for collecting specimens and books could not be supported by his £ 50 salary as Clerk, so he devised an ingenious plan whereby new Fellows were encouraged to take out a permanent subscription while da Costa entered the amount as an annual subscription, pocketing the balance of just over seventeen pounds. The scheme worked for four years until the frauds were discovered and the Council, to mounting horror, discovered five hundred pounds missing, then another four hundred, then two hundred, until da Costa stood accused of embezzling the enormous sum of £ 1492.14.2.

Late in 1768 da Costa was taken across Blackfriars Bridge and placed in the King's Bench Prison until his debt was paid. Fortunately, the letters do not break off at this point and one can follow da Costa, 'tho' in a prison placed' as he wrote to one of his friends, harnessing his energies to lecture courses, translations, the compilation of catalogues and, as it turned out, the writing of the 'Conchology or natural history of shells'.

From these letters it is clear that George Humphrey negotiated with the publishers, arranged for the drawing and engraving of the plates, and brought specimens to the prison for description, but the real author was undoubtedly da Costa. This explains why the book had to be anonymous, for no shell collector would allow precious material near someone convicted of embezzlement. From the drafts of da Costa's letters, from Humphrey's replies, from the acknowledgements of recipients, and from two dated wrappers in the British Museum (Natural History), it was possible to reconstruct the progress of the book and to date its six parts, which were published between December 1770 and about October 1771 by da Costa, an unrepentant debtor in the King's Bench Prison.

Many of his contemporaries doubted that da Costa would ever emerge from prison and until now the date of his release has never been given in the literature. However, patient hunting through Court files at the Public Records Office finally revealed a pencilled note in the margin of one of the Commitment Books showing that he was discharged on 8 October 1772, to begin a new life without any of the advantages of preferment and position so essential to the eighteenth century natural historian.

Manatees and mermaids

The third excursion, like the second, did not spring from any direct taxonomic needs and indeed produced results more of value to general biology than to taxonomy. I include it because the taxonomist is not always 'on duty', although his other interests may sometimes lead him to problems of scientific value when he least expects it. On this occasion I was attending the 2nd European Ichthyological Congress in Paris and had also been invited to the 'vernissage' of the exhibition 'L'Amerique vue par l'Europe'. Between congress and exhibition I visited the Bibliothèque Nationale to see some books and to study a set of eight watercolours which appeared to be exact copies made in the eighteenth century of paintings by the Dutch artist Frans Post during his stay in Brazil in 1637–1644. Four of the watercolours matched known paintings and my theory was that so too must the other four. Since Post's paintings now command five figure prices, there was the exciting possibility that four more were yet to be discovered.

One fact that I wanted to ascertain was whether the copyist had exactly copied from a painting or whether he had used one of Post's preliminary drawings. Art historians have searched in vain for Post's undoubtedly large compendium of sketches (on which he based over a hundred later paintings) and it would be an enormous step forward if the watercolours could prove that these sketches existed until at least the middle of the eighteenth century. By good chance, therefore, I was able to compare one of the watercolours with its counterpart painting, which was on show at the exhibition, and I found one very surprising difference. The watercolour showed a canoe with Indians spearing a manatee, whereas this was entirely missing from the painting. The scene was the São Francisco river in northeastern Brazil, but to make quite certain I checked the literature on the distribution of manatees, only to find that the most southerly limit was given as the Guianas, some 12° to the north. In other words, it looked very much as if the copyist had used his license and so the watercolours could not be taken as conclusive evidence that sketches once existed; the watercolours could equally have been modelled on the paintings in a free kind of manner.

It occurred to me, however, that the Caribbean manatee is a threatened species, so that its distribution in the seventeenth century may have been well to the south of its present range. I therefore delved

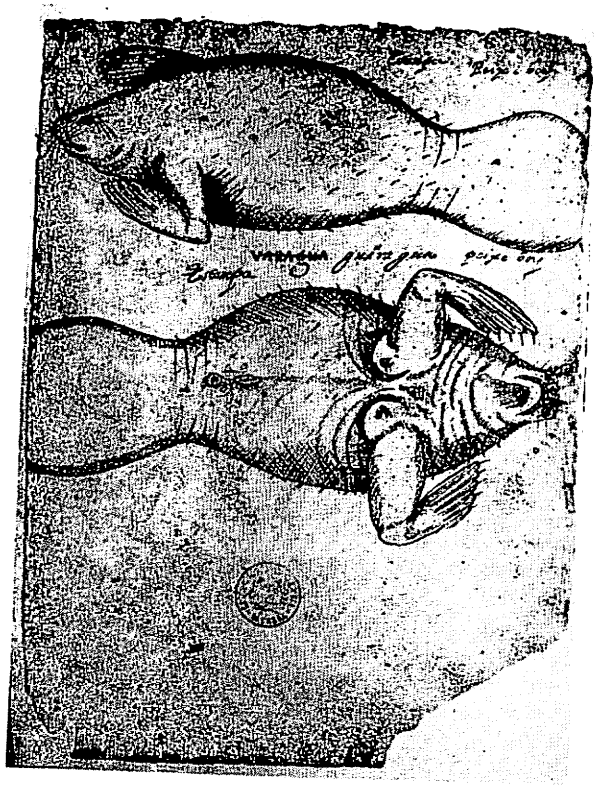

Fig. 3. Drawing of a West Indian manatee *Trichechus manatus* from São Luis (Maranhão) by Frei Cristóvão de Lisboa in about 1625. This is perhaps the earliest extant drawing of the species.

into all the sixteenth and seventeenth century literature on Brazil that I could locate, reaching back to the anonymous account of Cabral's discovery in 1500 and found that, after parrots, the next animal to be discovered from Brazil was none other than a manatee. One difficulty with the early literature was that the manatee references were almost inextricably mixed with stories of monsters, mermaids and mermen. Fortunately the Indians were well aware of the difference and the Indian names cited by the European travellers, missionaries and settlers were usually sufficient to disentangle the two. The result was that manatees in the sixteenth and seventeenth centuries certainly occurred as far south as Espirito Santo, about 20° south. The mermaids were found as far south as Rio de Janeiro and Santos and were probably pinnipedes, not sirenians.

Returning to the problem of the watercolours, there was now no reason to doubt that the copyist could have been quite faithful to a preliminary sketch by Post and with this assurance I was able to interpret other features in the watercolours and to prove that such sketches undoubtedly existed, probably in Paris, in the mid-eighteenth century. There is a strong likelihood that Post converted these into oil paintings and that some fortunate collector will turn them up one day. For manatees, the result of the study is equally helpful. In the first place, the early accounts, if carefully read, show that it was the Caribbean manatee and not the freshwater Amazon manatee that frequented Brazilian coasts. Secondly, although couched in somewhat archaic terms, they contain some valuable information on the habits of these animals. Finally, they show that a large stretch of the Brazilian coast could, with proper care, once again harbour these huge beasts.

The great music find

The last of my historical excursions is one that concerns a project that developed much wider, and as it turned out, much more spectacular ramifications, although the beginnings were even more modest than in the previous cases. I simply wanted to know the identity of the Brazilian clupeoid fish that Georg Marcgrave had called *Piquitinga* in his 'Historia naturalis Brasiliae' of 1648 since it was one of those pre-Linnaean 'indications' that had become entangled in our modern nomenclature. Linnaeus, and later Cuvier, had taken it as part basis for poorly described and in fact different species of anchovy. Schreiner & Ribeiro, on the other hand, had incorporated it in the species *Lile piquitinga*, a herring. Was Marcgrave's fish, and the literature that it had generated, a herring or an anchovy?

Marcgrave's Latin description is poor, as also his woodcut of *Piquitinga*, and it was not possible to resolve the problem that way. The original drawings for Marcgrave's book were said to have gone to the former Preussische Staatsbibliothek in Berlin and I wondered whether, as so often happens, the published figure had omitted or distorted diagnostic features. I wrote to the Deutsche Staatsbibliothek in East Berlin and was told that no less than seven volumes of these Brazilian drawings had been deposited in the library, but that they had been lost during the last war. This was tragic, for many plants and very many animals have been founded partly or even wholly on Marcgrave's species and there seemed no hope now of resolving the numerous nomenclatural problems that have arisen.

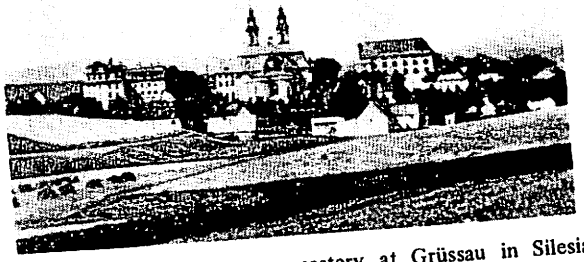

Fig. 4. The Benedictine monastery at Grüssau in Silesia where the Marcgrave drawings, as well as music and other manuscript material, were hidden during the war.

Shortly after, I was in correspondence with the counterpart library in West Berlin, the Staatsbibliothek Preussische Kulturbesitz, and learned more of the fate of the drawings. Apparently they had been evacuated to Silesia at the beginning of the war and were said by some to have been destroyed in a fire. A year later, my West Berlin informant, then head of the Manuscript Department, wrote again to say that one of the Benedictine monks from the little monastery of Grüssau to which the Berlin manuscripts had been evacuated, was now in West Germany and could tell me more of the story. To my astonishment, the monk assured me that there had been no fire at the monastery and that the manuscripts had survived the war, only to be removed in army lorries in 1946. Since then nothing had been heard of them. I was now more determined than ever to track them down.

It was at this point that music entered the investigation, for I discovered that the collection at Grüssau also contained what might be called the cream of the Berlin library's musical treasures. The original scores of Mozart's 'Magic Flute' and 'Jupiter' symphony, Beethoven's 'Grosse Fuge' and 7th, 8th and 9th symphonies (in whole or in part), Mendelssohn's Violin concerto and 'Midsummer Night's Dream', numerous Bach cantatas – these were just some of the hundreds of famous scores taken to Grüssau and not seen since 1941. This was a considerable stroke of luck, at least in one sense, for it was now very much easier to interest people in the search for the Grüssau material; seventeenth century natural history drawings may be critical for certain taxonomic studies, but names like Mozart, Beethoven and Bach command much more attention. From then on I decided to fuel my investigation with the loss to musicology and to hope that the Marcgrave drawings would follow in due course.

Just as I was trying various preliminary approaches, including letters to colleagues in Poland and other Eastern countries, there came the dramatic news that Mr Carleton Smith, the music journalist and personal adviser to philanthropic millionaires, had actually seen some of the lost scores in Poland but could not reveal their hiding place. He failed to answer my letters and during a visit to Berlin shortly after I was disappointed to find that the heads of the Music Departments in both East and West were extremely sceptical about this 'discovery'. However, they felt that a British initiative might be fruitful and so I took the matter up with our Embassy staff and British Council representative in Warsaw, through whom I was able to interview a visiting official from the Polish Ministry of Culture and Art. She was much concerned and promised a full investigation. Once more there was hope, but early in 1976 the Ministry reported that they had had no success.

Still determined to get to the root of the matter, I published an account of the loss of the Berlin material and the investigation to locate it. I reviewed the story in radio interviews, went to Paris to plead help from UNESCO, and kept up what had become a veritable barrage of letters. Edward Heath, with his deep interest in music and knowledge of political leaders, promised to help and James Callaghan, then Foreign Secretary, approved of my unoffical investigation, although he felt that offical action was not warranted at this stage. By now I was also receiving valuable help from the musical community and was sent all kinds of possible leads, vague rumours and unlikely people to investigate. One apparently run-of-the-mill suggestion was that I write to Prof. Jan Białostowski, Poland's premier art historian. I duly wrote what was now an almost standard letter, received the standard promise to let me know if anything turned up, and I thought no more of it.

Taxonomists in busy institutions cannot just abandon their day-to-day taxonomic work, not to mention the hundreds of enquiries they receive and their obligations to the studies of their fellow taxonomists. For long periods the 'Grüssau problem' had to be left to simmer, so that I was almost disinterested when I found a letter with a Polish stamp in my in-tray one morning in March 1977.

In fact, the letter was from Prof. Białostowski, on official Warsaw Museum paper, and he calmly announced that 'the problem of the lost manuscripts

has been cleared up.' He said he had been authorized to tell me that the manuscripts existed and in time he supposed that they would be returned to Berlin. Thus, after thirty-six years of oblivion, it would at last be possible to resolve the problems posed by *Piquitinga* and other Marcgrave species, not to mention questions of intense interest to a generation of musicologists now armed with techniques and speculations unknown when the manuscripts disappeared.

The Polish authorities have been as good as their word and in May 1977, as part of the friendship treaty signed between Poland and East Germany, Edward Gierek brought a small sample of manuscripts to Berlin as a token of their good intentions. Unfortunately, famous music scores carry much more weight than do drawings of Brazilian animals and plants, so it was too much to hope that 'my' Marcgrave drawings would be amongst the first returned. In the event, seven music scores were brought, including Mozart's 'Magic Flute', Mass in C minor and 'Jupiter' symphony, Beethoven's 3rd piano concerto and most of the 9th symphony and two Bach scores – music's crown jewels indeed.

The whole collection of manuscripts is now being sorted at the Jagiellonian Library in Krakow and I am told that at least some of the 'Libri picturati', the series that included the Marcgrave drawings, have already emerged. However, the task of sorting is enormous since there was much more in this collection than most of us ever dreamed. In addition, the Polish Government is keen to retrieve those items that were seized from Poland at the beginning of the war, transported to Berlin, only to be packed up and evacuated to Poland in 1941. It will probably not be until mid-1978 that this sorting will be completed and in the meantime the Jagiellonian Library, perhaps wisely, is not responding to the flood of letters from anxious specialists.

In this example, the real taxonomic/historical work has hardly begun, although a start has been made by Dr Martin Boeseman and his colleagues at Leiden, who have studied a set of contemporary copies of some of the Marcgrave original zoological drawings. Even from this set of copies, which is in Leningrad, it is already clear that a number of Linnean species which were based on Marcgrave have been consistently misidentified in the past; correction of the nomenclature will, amongst other things, help to correct some quite spurious distributional records for Brazil. For botany Anne Fox-Maule and her collaborators have studied an equally limited but important herbarium in Copenhagen that contains Marcgrave plants. For Brazilian taxonomy, not to mention ethnology, art history and other subjects, the rediscovery of the original drawings and their availability for study will be a historic day. Thirty years of questions can then be answered. Possibly the drawings would have come to light eventually, but if nothing else, the investigation has served to bring the importance of the collection to the attention of taxonomists and to create a climate in which these precious 'indications' will at last be properly assessed and integrated into modern taxonomic studies.

Two of the examples of historical taxonomy that I have given here are not unusual in the way that they developed out of actual taxonomic or nomenclatural needs, spread in directions far from actual taxonomy, but finally returned, bringing with them an added dimension that will enable their results to be used by a much wider spectrum of workers than was ever conceived in the beginning. The other two excursions reflect the fact that historical taxonomy, no less than taxonomy itself (or any other scientific field for that matter), does not always follow a strict sequential path but from time to time takes imaginative leaps that are often sparked off by chance. Such leaps are not unimportant, for they serve to broaden the horizons of the discipline and, of equal value, may forge highly productive links with other disciplines. In all, the expertise that is being gradually built up concerning old collections, collectors, literature and illustrations now goes a long way toward solving many of the everyday problems that plague taxonomists as a result of the Law of Priority. Thus, historical taxonomy is an important adjunct to a wide range of taxonomic studies and it takes its place, alongside calipers and graphs, microtomes and microscopes, computers and chemistry, as yet another tool for realizing the aim of a permanent one-to-one relationship between the nomenclature and the taxa that we explore.

Historical studies referred to in text

Whitehead, P. J. P. 1969. Zoological specimens from Captain Cook's voyages. J. Soc. Biblphy nat. Hist. 5: 161–201.

Whitehead, P. J. P. 1973. The Marcgrave drawings, Appendix I in The clupeoid fishes of the Guianas. Bull. Br. Mus. nat. Hist. (Zool.), Suppl. 5: 1–227.

Whitehead, P. J. P. 1976. The original drawings for the 'Historia naturalis Brasiliae' of Piso and Marcgrave (1648). J. Soc. Biblphy nat. Hist. 7: 409–422.

Whitehead, P. J. P & P. K. Talwar. 1976. Francis Day (1829–1889) and his collections of Indian fishes. Bull. Br. Mus. nat. Hist. (hist. Ser.), 5: 1–189.
Whitehead, P. J. P. 1977. The former southern distribution of New World manatees (*Trichechus* spp.). Biol. J. Linn. Soc. Lond. 9: 165–189.
Whitehead, P. J. P. 1977. Emanuel Mendes da Costa (1717–91) and the 'Conchology, or natural history of shells'. Bull. Br. Mus. nat. Hist. (hist. Ser.) 6: 1–24.

Editor's note

The story behind this editorial began, appropriately, with an interview I happened to hear on a radio broadcast one summer day in 1977. It was during that interview with Dr Whitehead of the British Museum that I first heard the ichthyomusical story. As ichthyologists are seldom the celebrities for such occassions, it was only then that I realized the importance of human culture as another 'environment' for fishes.

The next day I sent a letter to Peter Whitehead soliciting an invited editorial on his subject. After all, in the Preface to this journal, I promised not to neglect any of the possible environments of fishes, and not to hide behind scientific data without a human face. As Romain Gary said: '... that's exactly where betrayal of human values begins: *when the approach to science is merely scientific*' (in 'The Gasp' 1973).

Eugene K. Balon