Larry J Schaaf

'Do not burn my history': the physical evidence of William Henry Fox Talbot's creative mind

Writing in Latin to his mother, a frustrated 16-year-old lamented, 'I wish I could have depicted the shape of the heavens from below at dawn, but my drawing has ruined the paper.'[1] In 1833, 17 years later, William Henry Fox Talbot (1800–77), still unable to draw and embarrassed by this lacuna in his otherwise rich bag of skills, felt compelled to invent the art of photography.[2] Talbot was but one of the remarkable figures in a truly remarkable age; throughout the early Victorian period larger-than-life scientists and entrepreneurs roamed the Earth in seemingly disproportionate numbers. Henry Talbot can claim fair place amongst them: his 7 books, 12 patents and nearly 60 scientific papers outline his contributions in fields as varied as optics, mathematics, botany, crystallography, railway propulsion and the coating of metals.[3] He was a major founder of studies of Assyrian cuneiform and in some circles is known best for that. But Talbot will always be most widely recognised as the inventor of photography, that complex and perplexing visual art so pervasive in its influence that it is often nearly invisible. The key to understanding his thoughts and contributions lies in the voluminous artefacts left for the historian.

January 1839 brought the art of photography before the public through almost simultaneous announcements by Louis Jacques Mandé Daguerre in Paris and Talbot in Britain. As a person, Daguerre was a flamboyant and captivating showman, widely admired. His process was magical in effect, yielding highly detailed images on polished silver plates. Daguerre makes for a really good story, yet, astonishingly, the last major work on the man himself was published nearly 50 years ago![4] He cannot gain our pity as the poor forgotten inventor, for the unique images made by the daguerreotype are highly collectable perennial favourites. In contrast, Talbot, a brilliant but reclusive soul, initially presented his photogenic drawing process in a quiet and dignified way in scientific circles. Yet the literature on Talbot is abundant, rich and growing. How can this be?

While Daguerre took first place with his seductive daguerreotype, we have only the most general information on how it came about. In March 1839, a careless workman set a fire, destroying not only Daguerre's Diorama, but supposedly devouring the historical record as well. As it happened, the American painter/inventor Samuel F B

Morse, in Paris to promote his telegraph, was meeting Daguerre that very day. He reported, 'the great building of the Diorama, with his own house, all his beautiful works, his valuable notes and papers, the labor of years of experiment, were, unknown to him, at the moment becoming the prey of the flames. His secret indeed is still safe with him, but the steps of his progress in the discovery and his valuable researches in science are lost to the scientific world'.[5] Although the theatre itself had burned, in fact Daguerre's house was little damaged, and his neighbours proudly boasted about having saved its contents. Ten days later, the scientist-cum-politician François Arago, Daguerre's indefatigable supporter, claimed to have seen Daguerre's research notebook, but it is difficult to imagine why such a valuable historical object was not quoted from at the time and has never been seen since. As it is only through vaguely worded retrospective accounts that Daguerre's story is known at all, one must ask whether any artefacts, written or otherwise, ever existed to back up Daguerre's account. Save for the evidence of the very few daguerreotypes that he made himself, and a handful of letters (at least some clearly written by an amanuensis), we have nothing written by Daguerre and anything surmised about him is known only through a secondary source.[6]

Fame often lies solely within publication, by the original inventor, by his colleagues or by later historians, and the memory of many of Talbot's contemporaries is preserved primarily through their published works. Posthumous fires claimed the artefacts of his closest scientific friends, Sir David Brewster and Antoine Claudet.[7] Even more senseless are the unexplained losses of the artefacts by major figures such as William Hyde Wollaston and Sir Charles Wheatstone. A recent biography was forced to open with the explanation, 'most of this book is based on Wheatstone's scientific publications and the records of his scientific and business activities [...] there is very little record of his private life'.[8] Extensive archives survive for Talbot's colleagues Michael Faraday and Sir John Herschel, reflected by the growing body of literature on them.[9] Publication supplies a particular record, some would say a final proof of achievement, but printed works are safely wrapped in thick insulating layers of prior editing and remoteness of time. They can be interrogated for what is there, and perhaps analysed for what is not, but published sources inevitably lack the full dimensions of the person. Often omitting the fascinating untidiness of discovery and other aspects of the inventor's life, the printed record can only begin to hint at the genius that is human. Daguerre, unquestionably brilliant, was informally educated and was not a scientist, much less an author; his publications never existed. Another type of written record, loosely labelled manuscripts, can include correspondence, formal research diaries, scraps of paper with research notes, annotations on objects and other pennings of the human hand. Ralph Waldo Emerson observed, 'all history becomes subjective [...]

there is properly no history; only biography [...] all public facts are to be individualized, all private facts are to be generalized [...] then at once history becomes fluid and true, and biography deep and sublime'.[10] How are we to know those 'private' facts? In many cases, they can only be viewed by their shadows: facts preserved by artifice, the artefacts, those physical objects shaped by our subject's own hands. This must include handwritten documents as well as hand-wrought objects of other descriptions.

Happily, Talbot's artefacts escaped the fates of neglect and destruction, making his case diametrically opposite Daguerre's. The very richness and diversity of these compel us to ask different and more complex questions. As much as some historians might like to, we cannot responsibly examine a Talbot invention or image without reference to how he felt that day, to what he had just received in the post, to what his powerful mother encouraged, or to what personal pressures he faced. And to my taste, that is as it should be.[11] What follows is not even remotely a comprehensive inventory of Talbot's artefacts, but rather an attempt through examples to indicate the types of material surviving, where they might be found, some reasons why they wound up where they did, and perhaps even some hints as to why they might be important.

Mahogany and brass

Figure 1 Two examples of Talbot's 'mousetrap' cameras, c. 1835. (Science & Society Picture Library)

For an inventor of photography, we might wish for stables of wooden cameras and neat rows of vintage chemical bottles, miraculously preserved in his original laboratory. Until they think it through, most people are surprised to hear that the camera itself was not the critical element in the invention of photography, for camera obscuras were staples of draughtsmen for centuries before then.[12] Talbot's first (and often his favourite) photographs were contact-printed, what we now call photograms. For many people at the time, such cameraless images shaped their first impression of the new art. In June 1839, Caroline and Daniel Webster visited the Polytechnic School in London 'to see some discoveries in the way of painting: the paper is prepared with some chemical process, and the flowers or anything you fancy put on it between glasses and cotton, and then placed in the sun, and in ten minutes the impression is perfect'.[13] Much of the early, and all of the earliest, photographic equipment was improvised, borrowed from other scientific disciplines or adapted from ordinary domestic appliances. In the beginning, Talbot modified camera obscura boxes intended for artists. He then had the village carpenter make crude little wooden box cameras (Figure 1) that he fitted out with various telescope and microscope lenses ('mousetraps', his wife Constance once called them, for they were set about the grounds of Lacock Abbey for perhaps an hour at a time to accumulate sufficient exposure).[14] Talbot bought three of Daguerre's cameras, modifying them, and later commissioned

special cameras for specific purposes. Some cameras that came from Lacock Abbey postdate Henry Talbot's photographic period and perhaps belonged to his son, Charles Henry. Delightfully confusing the issue are the exact reproductions made by the Kodak workshops in England in 1948, masterpieces of craftsmanship so good that Dr D A Spencer and Beaumont Newhall agreed that 'it was impossible to tell the replicas from the originals when the comparison was made'.[15] The provenance of these is becoming murky at best. Given the usual interest in this type of artefact, it is perhaps surprising that it is in the area of apparatus that Talbot studies are noticeably weak.

The fellows and officers of the Royal Photographic Society collected Talbot apparatus, mostly by a 1921 donation from his granddaughter, Miss Matilda Talbot. This included a camera obscura and a solar microscope used by him in his early photography, several cameras including the 'mousetraps' and much of Talbot's Daguerreian apparatus. In 1934, she donated 10 cameras and an equal amount of related equipment to the Science Museum.[16] In 1936, Miss Talbot gave a more significant collection of equipment to the Royal Scottish Museum: 7 cameras, 2 lenses and about a dozen pieces of miscellaneous apparatus. Some of the actual furniture and chemical bottles that Talbot used were purchased by the Smithsonian Institution and brilliantly displayed in an evocative re-creation of the 'bottle room' at Lacock Abbey (sadly now consigned to warehouse storage). Smaller groups of equipment survive in South Africa and in private hands.

As is inevitable, some apparatus has been attributed to Talbot on questionable grounds. In 1839, Dr Robert Peter travelled from Kentucky to London to purchase medical equipment for the Kentucky Female Eclectic Institute. Later that year, he took the first known daguerreotype in Kentucky. The camera he used (still preserved in Transylvania University) did not look like other Daguerre cameras, so at some point the story took root that therefore this must be a Talbot camera![17] More understandable, however, is the confusion surrounding a Ross lens (Colour plate 6) said to have been used by Benjamin Bracknell Turner to take pictures for Talbot's *The Pencil of Nature*. Perhaps it was, but not by Turner.[18] In any case, all of these physical artefacts need to be much more carefully studied.

Considering Talbot's wide range of interests, it should not be surprising that many of the surviving instruments have no connection with photography. The Scottish collection is particularly prominent here, with at least 20 items ranging from prisms and microscopes to electrical machines, including Talbot's 1822 Amici reflecting microscope[19] and a 'human head, small model, with long hair, for electrical experiments'. Only recently the detective work of their Dr Allen Simpson secured the only known surviving example of Talbot's colour photometer (Colour plate 10), a device built in 1835 for an American collector, bringing to physical life one of Talbot's published studies.[20]

The history of Talbot's collections

Even though mahogany and brass can answer some types of questions, the real strength of the physical remains of Talbot's intellectual life lies largely in the domain of paper. Embodying the very imagination of Henry Talbot, these sheets include correspondence, research notes, photographic negatives and positives, and plates and prints for photogravure. The survival of such a substantial body of work started with the aspirations of the subject himself. At the ripe old age of eight, Henry Talbot commanded his stepfather to 'tell Mamma & every body I write to to keep my letters & not burn them'.[21] This attitude pervaded Talbot's Wiltshire home of Lacock Abbey and much of what survives can be traced to it. When Talbot died in 1877, his historical record was largely intact and passed to his son, Charles Henry, who distributed a few items but generally left the collection alone. When he died in 1916, Lacock Abbey and all its contents were bequeathed to Henry Talbot's granddaughter, Matilda Gilchrist-Clark, who immediately adopted the surname of Talbot.[22] Miss Talbot, 'Maudie' to her friends, actively set about establishing her grandfather's reputation. Her actions preserved Lacock Abbey itself, perhaps one of the grandest of Talbot artefacts, for its fabric and contents were the subject of many of his earliest photographs (Colour plates 2–4, 11–13). Even the physical contours of its grounds can be considered as artefacts, for the outlines of the nuns' old stew ponds and the placement of trees are evident as much today as they were in Talbot's photographs. In 1944, Miss Talbot conveyed the Abbey and Village to the National Trust.

The collections that came to Matilda Talbot were extensive. Much of the library had been sold off successively in Charles Henry's day, and she continued this practice until at least 1947, keeping only a fraction of her grandfather's books (the bookshelves at Lacock Abbey today are mostly filled with books from other National Trust properties, leading to some gloriously insane conclusions about Talbot's own reading habits). But this scattering is the only known major loss under her watch. She very generously gave sizable chunks of her collections to the Royal Photographic Society, the Royal Scottish Museum and to smaller institutions throughout the world (including some that are predicable, such as Philadelphia's Franklin Institute and the Royal Ontario Museum, and others more surprising, including St Andrew's College in South Africa).[23] The bequest that Matilda Talbot made that eclipsed all others was to the Science Museum in London. In 1934, curator Alexander Barclay brought a van to the Abbey and removed nearly 6000 original photographs and photoglyphic engravings, hundreds of letters and sheets of research notes, two key notebooks and much of the remaining equipment. The efforts of several members over the years brought the Royal Photographic Society (RPS) many items. Through the family of Sir John Herschel,

the Kodak Museum at Harrow acquired much of what Talbot had sent to his friend. In a curious turn of the historical wheel, much of this has recoalesced at the National Museum of Photography, Film & Television (NMPFT) in Bradford. Bringing together the Talbot collections of the Science Museum, the Kodak Museum and the RPS (along with a few acquisitions), it now holds by far the largest collection of Talbot artefacts in the world.

A great deal of misunderstanding has grown up around the provenance of the photographs contained in these distributions, largely based on the logical if naive assumption that if an artefact came from Lacock Abbey it must have come from the hand of William Henry Fox Talbot. People sent the inventor examples of their own work, following Talbot's techniques and sometimes even employing materials that he had supplied. He purchased many negatives, especially from the Rev. Calvert Richard Jones. The largest confusion, however, stems from his commercial relationship with his former valet, Nicolaas Henneman. Talbot, wanting to see his invention spread and used but unwilling to enter into commerce himself, backed Henneman in 1843 to set up an ambitious photographic studio and printing works in the town of Reading. The main thrust of this was to be the production of prints for use in illustrating books, especially Talbot's pioneering *The Pencil of Nature*. That approach failed, and Henneman re-established himself in London in 1847, primarily as a portraitist.[24] That business eventually failed as well. In partial repayment of his debts, Henneman sent all his remaining stock, including negatives that he had borrowed from Talbot, to Lacock Abbey in the 1850s. More than a century later, Talbot's great-great-grandson, Anthony Burnett-Brown, remembered unwrapping some of these sealed packages himself. Talbot clearly had never even seen their contents and they included a mixture of images from many sources.

A further muddying of provenance came on the wings of good intentions. Matilda Talbot had tried to interest numerous people in writing a biography of her grandfather. Her donation to the Science Museum failed to stimulate this, for Barclay became increasingly bogged down in his writing and excluded others from access to the collection. In 1937, he stymied the budding photo historian Beaumont Newhall by curtly declaring his own plans: 'Eventually the results of this work will be published, and until then, of course, the Museum reserves to itself the right of research into, and publication of, any original material which it has acquired for its collections.' Newhall never seriously considered Talbot after this.[25] During the Second World War, Harold White was dispatched to photograph Lacock village as an example of the invincibility of English values. He became so intrigued with Talbot's story (and charmed by Miss Talbot) that increasingly after the war he worked with her towards this biography. Attempting to impose order on chaos, they sorted and collated the

massive groups of letters and photographs still at the Abbey. Effectively barred from the Science Museum, in 1956 Miss Talbot tried to relate her artefacts to those that had gone elsewhere, publishing an appeal in *The Times* of London for the loan of letters by or about her grandfather.[26] At some point, Harold White's interests began to mutate. He accepted gifts from Miss Talbot, purchased other items from her and began buying up Talbot artefacts scattered in Lacock village. He sold various items, including one of Talbot's daguerreotype cameras and even his bed, to Dr A D Bensusan, the former mayor of Johannesburg (who had previously acquired a Talbot mousetrap camera from 'a foreign source' – it and the daguerreotype camera are now in the museum bearing his name). By the time of White's death in 1983 he had failed to complete his biography and had become more of a collector and active seller of early photographs.[27]

Matilda Talbot died in 1958, passing Talbot's archive on to her niece Katherine and her husband, Col. Alexander Denis Burnett-Brown. In 1964, the Smithsonian's curator of photography, Eugene Ostroff, persuaded them to donate one part of *The Pencil of Nature*, completing the Institution's set. The Smithsonian had started to obtain Talbot material in the nineteenth century (the earliest acquisitions being in photomechanical reproduction) and both Charles Henry and Matilda Talbot had made further donations. In 1965–67, Ostroff spent extensive periods at Lacock Abbey, intending to understand and compile Talbot's story. He meticulously organised the photographs and letters, marking them with 'LA' numbers in India ink to both permanently identify the objects and to show clearly in his microfilms. This work was very valuable, but Ostroff failed to realise that its boundaries were defined by the sortings done years earlier by White and Miss Talbot. Ostroff never saw the so-called 'DUs', letters marked by White as of 'doubtful use' for his biography, and clearly was unaware of (or was not informed of) the many photographs stashed in the rambling rooms and attics of Lacock Abbey.

Ostroff's intense scientific interest did serve to save one particularly vulnerable class of artefact. Many of Talbot's earliest experimental examples were destined to fade, some immediately, some over time. The family gave Ostroff many hundreds of faded examples (these were absolutely of no value in the marketplace at the time) in order for him to conduct research on restoring the lost images. We don't know how many of these were sacrificed on the altar of science, but the remainder was well protected and after Ostroff's retirement hundreds of them remained.[28] It is very possible that these faded scraps of paper, these important witnesses to the historical record, would have been discarded in the 1970s as being worthless, but today they are recognised as having enormous research value.

Col. Burnett-Brown died in 1966, right in the middle of Ostroff's studies, but his widow continued the arrangement. Sometime during

this period, Ostroff's wife, Caroline, a volunteer cataloguer, emerged with a new role. An art dealer in Silver Springs, Maryland, she published 'An offering from the Personal Collection of William Henry Fox Talbot'. Purchase was limited to museums and institutions of higher learning, 'through a desire by Talbot's heirs', and the allocation considered geographical distribution and existing institutional holdings. What was offered for sale was 24 sets of 3 to 15 original calotype prints. The proposals were opened in March 1967 and these prints are now part of many institutions' core collections. A similar offering of Talbot's photoglyphic engravings was made by Mrs Ostroff, apparently as a commercial venture, not restricted to institutions and it seems without the direct involvement of the family.[29]

Katherine Burnett-Brown died in 1971. Her son, Talbot's great-great-grandson, Anthony Maxwell Burnett-Brown, moved to Lacock Abbey, joining his sister Janet. Over the years, their interest in Talbot's story grew. Janet Burnett-Brown was the Abbey's official guide for many years and still maintains a lively expertise whilst living there. Mr Burnett-Brown took primary charge of the collections. Together they oversaw the founding of the Fox Talbot Museum (FTM) in 1975, operated by the National Trust on the edge of the Abbey grounds. His loans formed virtually all their initial holdings and his generosity continued with the deposit of the 'doubtful use' letters in 1980. These remained unlisted until, at his insistence, the National Trust hired a professional cataloguer in 2000 (the work was found to be so valuable that the Trust has continued this position to the present day). In his years in residence at the Abbey, Anthony Burnett-Brown progressively took on the zeal and generosity of Matilda Talbot, growing into the role as custodian of the Talbot legacy. Sadly, he died in 2002, without a direct intellectual heir, but in his last years he deposited the vast majority of remaining items in the Wiltshire Record Office and in the FTM. A family trust has been established by his widow and sister and others to ensure that the remaining collections are properly tended to and remain freely available for use by scholars. This laudable generosity continues the Talbot family tradition and is a model unusual in the field of artefacts.

Talbot's correspondence

In the era before the telephone, the fax, e-mails and instant messaging, handwritten letters reigned supreme. Written and received at the rate of hundreds per year by a person like Talbot, surprisingly few large groups of nineteenth-century letters have been preserved. At present count, there are nearly 10,000 known letters to and from Talbot! Full transcriptions of these have recently been published on the Web and their enormous range of subjects is just now being explored on a wide scale.[30] The majority of these are Talbot's incoming correspondence, kept by the family and now on deposit at the FTM. Significant

pockets of outgoing letters have been located (at present in nearly 70 collections worldwide) and this side of the correspondence is expected to grow as more readers discover the Website and report letters in unanticipated locations. In many cases, of course, the transcribed content of the letter provides sufficient information. Sometimes, though, the original artefacts remain critical. Their physical structure retains obvious evidence, such as watermarks that aid in dating, but there are other clues in the excited race of the hand, the smudge of the ink and the expansion or contraction of the writing in order to fit the page.

Most of Talbot's bound manuscript diaries and research notebooks are deposited at the FTM. In addition to travel diaries, commonplace books and pocket reminder books, these comprise regular mathematics and science notebooks for the period 1822–38. There are also substantial numbers of miscellaneous notebooks, especially ones recording his important work in etymology. Two of Talbot's notebooks most critical to the history of photography, *P* and *Q*, covering the years 1839–43, are now at the NMPFT (Figure 2) and have been published in facsimile.[31] The NMPFT and the FTM hold large numbers of loose pages of Talbot research notes. One small but intriguing notebook is in the J Paul Getty Museum and additional critical sheets are at present in private hands. These notebooks are complex objects that not even a good facsimile can replace for all purposes. For example, tracking the specific ink can point to additions to earlier passages and offsetting (subtle transfer of ink from one surface to another in its contact) can reveal evidence of sheets inserted in the past but now missing. Albums of photographs can reveal much by the associations internal to that volume: watermarks, sequencing, traces of earlier prints, glue lines, all contribute to the research potential.

Photography and photogravure

It is easy to overlook the fact that for generations we have seen more photographs in printer's ink than in silver. Talbot pioneered this field as well as that of photography: his work on photographic engraving and photoglyphic engraving led directly to the perfection of the photogravure process. Surprisingly, he devoted the last third of his life to this, whereas photography itself occupied little more than a decade. Reflecting Barclay's personal interests, the major part of Talbot's work in this area is at the NMPFT, but a substantial amount remains at Lacock and there are important elements in private collections.[32] This is another area of Talbot studies rich in artefacts but at present poor in study. The hundreds of metal plates that Talbot etched by himself, varying the chemistry and other physical approaches, retain enormous amounts of information. The plates often started in a small printing supply workshop, were modified and processed by Talbot and were then printed by one or more outside printers, each step adding to the physical record.

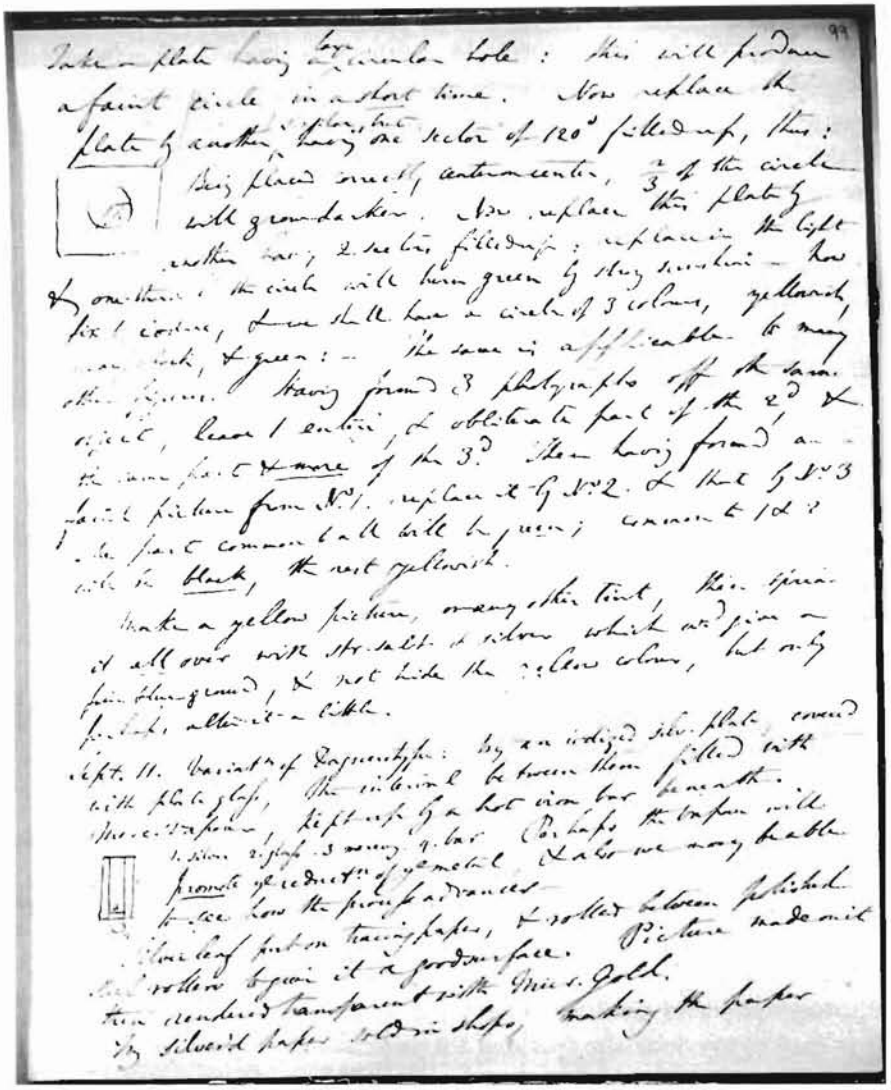

Figure 2 A page from Talbot's notebook P, *18 August/11 September 1839. (National Museum of Photography, Film & Television)*

That leaves for last what are perhaps the most beautiful and poignant of Talbot's artefacts: the photographs that he created. These images represent where Talbot had been, what he had seen, what he thought and what he felt. A few of them have been widely reproduced, but most are unknown to the general public.[33] They can be gorgeous and stunning. On another level, these artefacts provide a unique documentary record: an 1841 panorama of London just before Westminster was rebuilt; Paris streets prior to Baron Haussmann; Oxford colleges looking even more ancient than they do today (the crumbling stone that Talbot complained about was restored in the 1960s); the faces of people now long dead. Many are of Lacock Abbey itself, sometimes highlighting the dilemma the National Trust faces in conservation, for some parts have now been restored to a form

existing before Talbot was even born. Recently a Talbot photograph permitted the historically accurate recreation of Lady Elisabeth's rose garden. Some of the china and statuettes in Talbot's photographs can still be seen in the Abbey. One example, now on display in the FTM, is Talbot's favourite sitter, a plaster bust he knew as Patroclus. In this case, however, the surviving artefact clashes with the photographic record. The plaster was forgotten and half buried in a barn when Harold White rediscovered it in the 1950s. His young daughter Patricia cleaned it up the best she could with a toothbrush, but the now-softened details barely indicate the sharply chiselled features that so fascinated Talbot when he watched the interplay of light on them. An open-minded historian could be persuaded that a modern plaster casting taken from the original marble would provide a much closer representation of what Talbot himself saw.[34]

Some groups of Talbot's photographs were preserved by his extensive efforts to share his new invention with his colleagues. Close working friends such as Sir John Herschel received new photographs as they were made.[35] Sir David Brewster was an avid collector of Talbot's work: 'I do not believe that a Child ever received a Toy with more pleasure than I do a Sun-Picture. It is a sort of monomania which my dealings with light have inflicted upon me.'[36] Fortunately, one major album of these survived Brewster's house fire.[37] In 1839, Dr Joseph Christianovich Hamel became intrigued with the question of priority between Joseph Nicéphore Niépce, Daguerre and Talbot. He collected examples from Talbot to send to the Russian Academy of Sciences and Talbot later sent more; miraculously, these have survived in virtually original condition in the Academy's archives to this day.[38]

The author has been compiling a *catalogue raisonné* of the photographs by Talbot and his circle for many years. At present, nearly 16,000 negatives and prints have been examined worldwide, stemming from nearly 4000 distinct images that Talbot created in the span of a few years.[39] Associating the original negative with all the known prints made from it can yield a good deal of information. If a negative is undated, perhaps the recipient of a print got one inscribed by Talbot or made a contemporaneous note on it himself. Locations and personal names are sometimes identified on one particular print, thus identifying the whole group when it is brought together. Even totally faded negatives, such as the sacrificial research collection brought by Ostroff to the Smithsonian, have their uses, particularly in morphology. These negatives were made on ordinary writing paper and many have Talbot's annotations on the back. Talbot cut all of these sheets of paper by hand, fitting them into non-standard cameras, often later cropping them and squaring them up after they were processed. Each has a unique size and shape, perhaps a wavering line in one edge, a slight lack of parallelism, a snag of the scissors or a chopped-off corner. Because Talbot coated his print paper by hand as well, he

always printed on a sheet larger than the negative in order to ensure uniformity of the sensitive coating. In cases where these borders have been retained (which is often), the distinctive outline shape of the original negative has been preserved. When Talbot's silver images fade, the darkest areas generally are the last to go, so the outline of the negative is often still clearly visible even if the image is not. Computer databases allow matching up a totally faded negative in the Smithsonian with a print in Japan. The print can give us the pictorial information now missing from the negative, and the inscription on the negative can identify and date the print. If the print carries an inscription, matching it to its negative can add that knowledge. Often this sort of synthesis of information can be further amplified in the pages of Talbot's research notebooks and correspondence.

Because of the obvious historical importance of photographs made by the very hand of the inventor of photography, perhaps nearly as often because of their sheer beauty, many collections worldwide hold one or more examples. Beyond the massive consolidated photograph collections at the NMPFT and the significant groupings on loan to the FTM, there are few large institutional collections. Counting the experimental examples, the Smithsonian has about 900 and the Getty has nearly 400, mostly from the acquisition of several key private collections. Size is not the only measure of quality, and some smaller collections include an interesting balance between early experimental and later more visually sophisticated Talbot photographs. The National Gallery of Canada has fewer than 150 original Talbots, but included among them are critical early examples from the André Jammes collection and a splendid 1880s album, compiled by Charles Henry Talbot from the finest prints he could select at Lacock Abbey.[40] The Metropolitan Museum of Art in New York has a similarly diverse small collection, ranging from a glorious album compiled by the Italian botanist Antonio Bertoloni from Talbot photographs he received in the earliest years of photography, balanced by some carefully selected later examples, including some from the legendary William Rubel Collection.[41]

One of the largest reservoirs of Talbot artefacts, particularly photographic negatives and prints, has always been the private sector. Its sources are long-ago distributions from Lacock Abbey, purchases of the effects of people Talbot himself sent examples to, locating prints that were sold commercially by Henneman or otherwise published, and trades amongst collectors. The young but potent J Paul Getty Museum photographic collection is a primary example of how these can be tapped, for the newly-hatched museum created an instant behemoth by incorporating the collections of Bruno Bischofberger, Arnold Crane and a goodly portion of that of André Jammes.[42] Harrison D Horblit's collection, much of it drawn from the collection of the madcap bibliophile Sir Thomas Phillipps (a friend of Talbot's)

is now at Harvard.[43] Still, many items remain in private hands, often revealed only through auction catalogues or dealer offerings. In the past, booksellers such as Ernest Weil were the main commercial source of Talbot artefacts. Sotheby's and Christie's were particularly active in the 1970s and 1980s, and still have some good offerings, but the ready sources of supply seem to be drying up. A modern and continuing indication of the range and depth of this collective body of material is displayed in the pages of the *Sun Pictures* catalogues issued by Hans P Kraus, Jr, the New York dealer who has emerged as the specialist in Talbot artefacts (Colour plate 13). It is a movable feast, constantly changing as unexpected new offerings replace those that have sold. Some of these remain within the private sector, whereas many have already made their way into public collections.

The real influence of these artefacts of Talbot's lifelong work is only beginning to be felt and much potential remains for interpretation and incorporation into historical studies. In the past, a few favourite Talbot images and a few choice quotes from his letters were referred to repeatedly. They should be given a rest. Jacques Barzun pointedly exclaimed that 'in the struggle against conventional ideas the historian or biographer is often leader of the opposition. His strength is that he wields the weapon of fact.'[44] Talbot scholars are very well supplied with artefacts, the very weapons of truth, and must be charged with using them. With worldwide access becoming increasingly sophisticated through research tools, these artefacts promise to influence strongly not only the future history of photography, but also the many fields where the enormously creative and productive person of William Henry Fox Talbot left his touch.

Notes and references

1 Talbot, W H F, letter to his mother, Lady Elisabeth Feilding, 21 December 1816. His original Latin (translated by Dr Georgia Toutziari) was 'Mane caeli faciem subter describere vellem Sed chartem foedat multa litura mea.' LA16-43, FTM, Lacock, UK, Talbot Correspondence Project Doc. No. 00734. This is one of the nearly 10,000 letters to and from Talbot that have been transcribed in a Glasgow University project directed by the present author; they are available on the Web at http://www.foxtalbot.arts.gla.ac.uk.

2 The two standard biographies of Talbot are: Arnold, H J P, *William Henry Fox Talbot: Pioneer of Photography and Man of Science* (London: Hutchinson Benham, 1977); Buckland, G, *Fox Talbot and the Invention of Photography* (Boston, MA: David R Godine, 1980). The gestation and eventual birth of photography can be considered from various points of view. Talbot was the first to publish a practical negative process from which multiple prints on paper could be made, the very method that defined the mainstream of photography for the 150 years before the digital age. One set of book ends (of many) on the question of why photography was invented in the first place is framed by

Galassi, P, *Before Photography: Painting and the Invention of Photography* (New York: Museum of Modern Art, 1981) and Batchen, G, *Burning with Desire: The Conception of Photography* (Cambridge, MA: MIT Press, 1997).

3 Weaver, M, *Henry Fox Talbot, Selected Texts and Bibliography* (Oxford: Clio Press, 1992)

4 Gernsheim, H and A, *L. J. M. Daguerre, The History of the Diorama and the Daguerreotype* (London: Secker & Warburg, 1956). Although there are shelves of books on daguerreotypy, the lack of any significant literature on the inventor underscores the poverty of the sources. In fact, Dr Stephen Pinson is now researching what promises to be the only major advance about Daguerre himself since the Gernsheims' book.

5 This in a letter to his brother published in the *New York Observer* (20 April 1839).

6 The only significant relevant correspondence, although it reveals little of Daguerre's contribution, is that with Joseph Nicéphore Niépce. See Bonnet, M and Marignier, J-L, *Niépce, correspondance et papiers* (Saint Loup des Varennes: Maison Nicéphore Niépce, 2003).

7 Brewster was a prolific journalist, and his letters are preserved all over the globe. However, all his incoming correspondence and research notes were destroyed in a house fire immediately after his death. The standard work remains Morrison-Low, A D and Christie, J R R, *Martyr of Science: Sir David Brewster, 1781–1868* (Edinburgh: Royal Scottish Museum, 1984).

8 After his death, Wollaston's papers were turned over to Henry Warburton to write a biography. On his death they went to the science writer Mary Somerville, but after her death in Naples in 1872, they could not be found – virtually none have turned up since.

9 Such as Martin, T, *Faraday's Diary, Being the Various Philosophical Notes of Experimental Investigations Made by Michael Faraday, DCL, FRS, During the Years 1820–1862* (London: G Bell & Sons, 1932–36). Since 1991, F A J L James has been publishing *The Correspondence of Michael Faraday* (London: Institution of Electrical Engineers); six chronological volumes are in progress. Herschel's archives were preserved by a careful family for many years but were finally broken up in a 1958 sale. Fortunately, most of this has been traced to scattered archives in the Royal Society, London, National Maritime Museum, University of Texas, Harvard University and smaller holdings in locations such as the Brenthurst Library in South Africa. A comprehensive overview of his letters is in Crowe, M J, *A Calendar of the Correspondence of Sir John Herschel* (Cambridge: Cambridge University Press, 1998).

10 Emerson, R W, *Essays*, first series (London: James Fraser, 1841), pp240, 246

11 Such influences are emphasised in Schaaf, L J, *Out of the Shadows: Herschel, Talbot & the Invention of Photography* (London: Yale University Press, 1992).

12 Talbot was first inspired by frustration with a related instrument, the camera lucida, which was an optical aid to drawing but did not form an image useful for photography. See Schaaf, L J, *Tracings of Light: Sir John Herschel & the Camera Lucida* (San Francisco, CA: Friends of Photography, 1990). Talbot then turned to the camera obscura – its history is detailed in Hammond, J H, *The Camera Obscura, A Chronicle* (Bristol: Adam Hilger, 1981).

13 *Mr. W. & I, Being the Authentic Diary of Caroline Le Roy Webster during a Famous Journey with the Hon. Daniel Webster to Great Britain and the Continent in the Year 1839*, with an introduction by Fuess, C M (Bingingham, NY: Ives Washburn, 1942), pp30–1

14 'Shall you take any of your mousetraps with you into Wales? It would be charming for you to bring home some views.' Talbot, C, letter to Talbot, H, 7 September 1835, LA35-26, FTM, Lacock, UK, Talbot Correspondence Project Document No. 03132.

15 '"Couldn't tell originals", rare camera replicas received from England', *Kodakery*, 7/12 (24 March 1949), p1. This was a project conceived by Dr Walter Clark of the Kodak Research Laboratory in Rochester, NY. The members of the Kodak Society of Experimental Engineers and Craftsman, based in Harrow, UK, took on the task and did their work so well that Dr Spencer marvelled that the 'marks of time and use – scars, stains, remnants of sensitized paper once stuck down in paper holders – have been reproduced with astonishing fidelity" (report, 16 February 1949, Registrars Office, George Eastman House).

16 Six of these are illustrated in Thomas, D B, *The Science Museum Photography Collection* (London: HMSO, 1969), pp6–7; colour plate 8 is shown with a mock-up of the Oriel Window.

17 Talbot never manufactured or sold cameras. From his own notes, Dr Peter more likely acquired this camera in 1857 and used a home-made one in 1839. The Talbot connection was debunked by George M Bodner in 'Chemical artifacts: the Museum of Early Philosophical Apparatus at Transylvania University', *Bulletin of the History of Chemistry*, 9 (1991), pp22–7.

18 B B Turner possessed a Ross 'Photographic lens with which the pictures of Mr. Fox Talbot's Pencil of Nature were taken', *Catalogue of the Special Loan Collection of Scientific Apparatus at the South Kensington Museum* (London: HMSO, 1877), item 954b, p239. This was the basis of a confused statement made by the elderly John Spiller in his obituary of Turner, claiming that Turner 'being a friend of Fox Talbot, and contributing some of the illustrations to the now famous original publication known as *The Pencil of Nature*' used this lens. 'Obituary, Benjamin Bracknell Turner', *The Photographic Journal*, 19/6 (26 February 1895), p159. Spiller claims this happened in 1849, three years after the book ceased publication, but that was the year that Turner took out a calotype licence from Talbot. Perhaps he bought the same kind of lens that Talbot had used earlier, or perhaps he might have even purchased a lens that Talbot actually used and had passed on to Nicolaas Henneman's photographic establishment (which folded in the 1850s).

19 This is illustrated in Smith, G 'Talbot and Amici; early paper photography in Florence', *History of Photography*, 15/3 (Autumn 1991), pp188–93.

20 This was made for the American instrument collector Charles N Bancker and based on Talbot's 'Experiments on light', *London and Edinburgh Philosophical Magazine and Journal of Science*, 3/5 (1834), pp321–34. This is described in Simpson, A D C, 'Talbot's photometer, or developments before photography', *Studies in Photography* (1996), pp8–10.

21 Talbot, W H F, letter to Charles Feilding, 27 May 1808, LA8-5, FTM, Lacock, UK, Talbot Correspondence Project Document No. 00492

22 A sense of the nature of her efforts can be gained in Talbot, M, *My Life and Lacock Abbey* (London: George Allen and Unwin, 1956).

23 Some of these, such as the one in the Los Angeles Museum of Science, Art and Industry, are proudly held to this day. Others are (hopefully) somewhere safely in storage at their respective recipients, but as of this writing, Miss Talbot's gifts to the following have yet to be located: Auckland Institute and Museum, New Zealand; Franklin Institute, Philadelphia; Royal Ontario Museum of Archaeology, Toronto; St Andrews College, Grahamstown, South Africa; the Thomas Moore Society, Dublin; London County Council; and the University of Kansas at Lawrence.

24 Its birth and fall are examined in Schaaf, L J, *Introductory Volume to the Anniversary Facsimile of H. Fox Talbot's The Pencil of Nature* (New York: Hans P Kraus, Jr, 1989).

25 Barclay, A, letter to Beaumont Newhall (at the Museum of Modern Art), 28 September 1937, Special Collections, Getty Center for the History of Art and the Humanities. A popular magazine article was Beaumont Newhall's most extended writing on Talbot: 'H. Fox Talbot, Esq., an authoritative biography of the great English photographic inventor', *Modern Photography* (December 1952), pp86–9, 129–31, (January 1953), pp66–7, 108–11. This author remembers discussing Talbot with Helmut Gernsheim, wondering at the near animosity Gernsheim exhibited towards Talbot, whilst studying Daguerre in detail (see note 4). With some feeling, Gernsheim told me that in the first instance he had set out to study Talbot, similarly with Matilda Talbot's backing, but had been blocked from even examining the Science Museum's collection, much less making any use of it. Consequently, he turned his attention towards Daguerre. The historian Harold White was most thankful to Dr David Thomas and to John Ward when he was finally allowed to see the collections in the 1970s.

26 'Father of photography', *The Times*, 53,495 (3 April 1956), p11

27 For a more complete view of White's circumstances, including some of his writings, see Schaaf, L J, *Sun Pictures Catalogue Three: The Harold White Collection of Works by William Henry Fox Talbot* (New York: Hans P Kraus, Jr, 1987).

28 Schaaf, L J, 'The Talbot Collection: National Museum of American History', *History of Photography*, 24/1 (Spring 2000), pp7–15

29 Illustrated copies of this brochure are kept in numerous collections, but the final locations of most of these have yet to be traced. The Huntington Library in California and the Art Institute of Chicago were two of the purchasers. The Huntington also got part of one of the sets of 'An Offering of Photo-mechanical Prints by W. H. F. Talbot', presumably through a secondary source.

30 For more on this project see note 1. Many additional Talbot family letters are preserved at the FTM and the Wiltshire Record Office and these often shed light on Henry Talbot's work – they are not at present included in this project.

31 These have been published in facsimile and transcription: Schaaf, L J, *Records of the Dawn of Photography: Talbot's Notebooks P & Q* (Cambridge: Cambridge University Press, 1996).

32 For more on this under-studied area of Talbot's invention, see Schaaf, L J, *Sun Pictures Catalogue Twelve: Talbot and Photogravure* (New York: Hans P Kraus, Jr, 2003).

33 Although some of Talbot's photographs are widely reproduced, it is more difficult to examine a broader range of images. Diverse selections are in Coleman, C, *Huella de Luz; El arte y los experimentos de William Henry Fox Talbot* (Madrid: Museo Nacional Centro de Arte Reina Sofía, 2001), and Roberts, R, *Specimens and Marvels; William Henry Fox Talbot and the Invention of Photography* (New York: Aperture, 2000).

34 The original marble is in the British Museum and these castings are once again freely available commercially, much as they were in Talbot's day.

35 In addition to those in the former Kodak Museum, Herschel's Talbot photographs are now in The University of Texas at Austin and the Bibliothéque Nationale in Paris.

36 Brewster, D, letter to Talbot, 13 November 1847, NMPFT Inv. No. 1937-4963, Talbot Correspondence Project Document No. 06048

37 The album, now in the J Paul Getty Museum, has been published: Smith, G, *Disciples of Light: Photographs in the Brewster Album* (Malibu: JPGM, 1990).

38 Schaaf, L J, 'Niépce abroad: Britain in 1827 & 1839 – Russia in 1839 & 1994', *Nicéphore Niépce, un nouvelle image* (Chalon: Musée Nicéphore Niépce, 1998), pp100–6

39 Although the full catalogue has yet to be published, subsets of it are on deposit at several institutions. A prospectus of what is under way is represented by the 100 Talbot photographs exactingly reproduced full size in Schaaf, L J, *The Photographic Art of William Henry Fox Talbot* (Princeton: Princeton University Press, 2000).

40 This was proudly accepted by the members of the Bath Photographic Society and reported on in *The British Journal of Photography*, 36/1505 (8 March 1889), pp168–9. It was sold by later Society members in 1975.

41 Further description of the album and its compilation is in Smith, G, 'Talbot and botany: the Bertoloni album', *History of Photography*, 17/1 (Spring 1993), pp33–48. The Rubel holdings are represented in Schaaf, L J, *Sun Pictures Catalogue Eight: The Rubel Collection* (New York: Hans P Kraus, Jr, 1997).

42 An outline of this collection is in Schaaf, L J, *In Focus: William Henry Fox Talbot* (Malibu: J Paul Getty Museum, 2002).

43 An indication of these is in Schaaf, L J, 'Splendid calotypes: Henry Talbot, Amelia Guppy, Sir Thomas Phillipps, and photographs on paper', in *Six Exposures: Essays in Celebration of the Opening of the Harrison D. Horblit Collection of Early Photography* (Cambridge, MA: Houghton Library, Harvard University, 1999).

44 Barzun, J, *Clio and the Doctors: Psycho-History, Quanto-History & History* (Chicago, IL: University of Chicago Press, 1974), p128