The Rev. Joseph Bancroft Reade, M.A. FRS

Malcolm J Reade

Dear reader,

The very fact that you have access to this article suggests that you have some interest in the science of microscopy, in one or more of its various forms.

My ancestral relative, the Rev. Joseph Bancroft Reade, M.A. FRS (1801-1870) was a keen microscopist and indeed, as the following text shows, was also a pioneer of photography throughout much of the 19th Century. He was a Fellow of the Royal Society, a founding Member of the Microscopical Society of London and was President of the later Royal Microscopical Society in 1869-70. He was also a Fellow of the London Photographic Society, and The Royal Astronomical Society as well as being a Member of the Royal Meteorological Society.

The text that follows was originally the work of Aleyn Lyell Reade, a professional genealogist and son of the Liverpool City Architect, Thomas Mellard Reade FGS (1832-1909). A. L. Reade's work was originally published in a folio sized book, "The Reades of Blackwood Hill and Dr Johnson's Ancestry" in 1906 by private subscription. Only 350 copies were printed. Like most genealogists, A. L. Reade found plenty of words for the "men of letters" in our family, and I suspect rather ignored the "horse traders". One can only smile…

Aleyn Lyell Reade died in 1953, and according to current EU copyright law, his work is protected for 70 years after his death. Reade was a family historian however, and would have been delighted that his words are again being read more than a century after they were first published. Moreover, the Americans, who would seem to have blind spot for such matters as EU copyright law, have already taken it upon themselves to scan and make his work available on the internet. It is available from the Cornell University Library at https://archive.org/details/cu31924029787110 for the real enthusiast. The book is also now available on Amazon as a "printed on demand" paperback. A few of us treasure copies of the original work. I make no apologies therefore for once again showing his work, now in the public domain, to the light of day.

The following text is not an easy read, but it is nonetheless an interesting one. It was, after all, written sometime between 1894 and 1906 and contains copies of a lot of correspondence that was penned much earlier in the 19th Century. The work has been scanned and subjected to Optical Character Recognition software. Such software is not perfect, and it is likely that one or two errors have crept in and gone un-noticed. I have re-formatted the text, and tried, as best as I may, to make it more readable by eliminating unnecessary abbreviations (the Victorians were terrors for this).

I also expect the document to be heavily, but hopefully sensitively, edited by the publishers of infocus magazine or it would otherwise occupy the whole issue.

Malcolm J Reade
FIED FRMS M.Inst.M&C(S.A.)
28 July, 2014

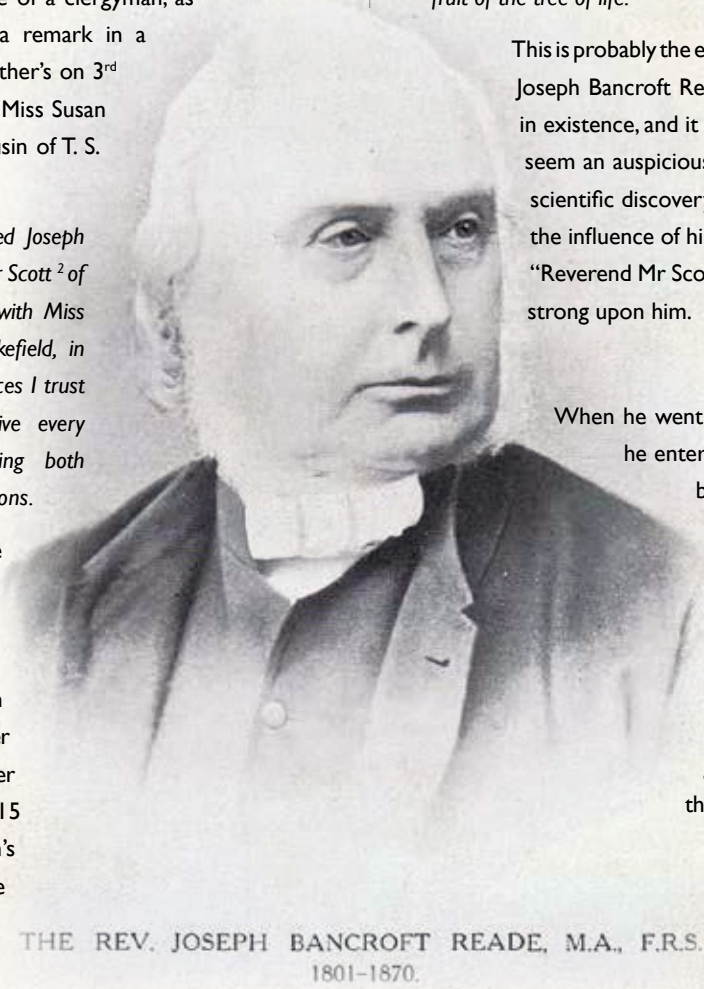
Joseph Bancroft Reade,[1] eldest son of Thomas Shaw Bancroft Reade by Sarah his first wife, daughter of Richard Paley, was born on 5 April 1801 at his father's house in Kirkgate, Leeds, and baptized on 23rd July at the Parish Church. He was educated at the Leeds Grammar School. Like his brother Richard he did not proceed straight from the School to the University, but was placed for a time under the care of a clergyman, as is shown by a remark in a letter of his father's on 3rd April 1819 to Miss Susan Salmon (a cousin of T. S. B. Reade).

We have placed Joseph with the Rev Mr Scott [2] of Hull, & Bessy with Miss Wilson of Wakefield, in both which places I trust they will receive every advantage, being both truly pious persons.

At Hull he probably remained until the next year. On 7th September 1819 his father enters £15 for Joseph's "entrance money at College" and on 12th October "cash to take to Cambridge," £30.

In conclusion Joseph writes thus:

The day shall soon dawn when Cambridge shall take the harp of David from the willows, & listen with delightful attention to the strains of the Sweet Singer of Israel. A period shall arrive when the interests of earth shall no longer interfere with the value of the Soul & the importance of an eternal world. Whether Cambridge shall be made an instrument of more than ordinary power in hastening on this blissful time, is not for us to determine. It is sufficient for us to know that our energies are called forth and our prayers demanded, that each individual Soul may become a Celestial Paradise, guarded on every side by the flaming Sword of the Word of God, which turneth every way to keep the fruit of the tree of life.



THE REV. JOSEPH BANCROFT READE, M.A., F.R.S.
1801–1870.

This is probably the earliest specimen of Joseph Bancroft Reade's composition in existence, and it certainly does not seem an auspicious start for a life of scientific discovery. It is evident that the influence of his father and of the "Reverend Mr Scott of Hull" was yet strong upon him.

When he went up to Cambridge he entered Trinity College, but afterwards migrated to Caius, where he was elected a scholar.

In 1825 Joseph Bancroft Reade graduated B.A. as thirty-sixth senior optime. Shortly afterward he was ordained deacon as curate of Kegworth, Leicestershire, where he arrived on or before 11th June. Next month he married.

In 1826 he was ordained priest by Bishop Pelham of Lincoln, and proceeded M. A. in 1828, for which his father, on 18th June, enters £30 as the expenses. He remained at Kegworth until 1829, when he

was appointed curate and afternoon lecturer of the parish church of Halifax,[3] holding that position until 1832. From 1832 to 1834 he was incumbent of Harrow-on-the-Weald. After this he seems to have lived for some time at Peckham, and in 1839 was presented by the Royal Astronomical Society to the benefice of Stone, Bucks, and continued as Vicar of that parish until 1859, when he was presented by Lady Frankland Russell to the Rectory of Ellesborough in the same county and was inducted on 7th April 1859. In 1863, by exchange with the Rev. J. H. R. Sumner, he was instituted to the Rectory of Bishopsbourne, near Canterbury, and held it until his death in 1870.

It is as a scientific discoverer that Joseph Bancroft Reade will be remembered. His natural bent of mind was evidently manifest at an early age, for when he was only fifteen his father presented him with a microscope made by Dolland. An exact counterpart of it was, by his request, presented to the Royal Microscopical Society immediately after his death, as an interesting landmark in the progress of microscopy.

Joseph Bancroft Reade does not appear to have published the result of any of his investigations until 1837, when he contributed to the Philosophical Magazine a paper "*On the existence of structure in the ashes of plants, and their analogy to the osseous system of animals.*"

Later in the same year he contributed a further paper to the Philosophical Magazine entitled "*Observations on the structure of the solid materials found in the ashes of recent and fossil plants.*"[4]

In 1838 he proved the incorrectness of the view then held by English botanists, that spiral vessels were peculiar to monocotyledonous plants. He gave a detailed account of his discovery in the Annals of Natural History, in which he established the existence of similar spiral vessels in the roots of dicotyledonous plants, and said the orthodox view was held so strongly that he had always failed to remove it except by ocular demonstration.

Reade was elected a Fellow of the Royal Society in 1838, and in 1839 became one of the original members of the Microscopical Society of London.

It was at this early period of his scientific labours that Joseph Bancroft Reade made his most important discovery "*the value of an infusion of galls as a sensitiser of paper treated with silver nitrate, and that of hyposulphite of soda for fixing the photographic image*". This discovery formed the foundation of modern photography, and will ever mark him out as one of the most distinguished pioneers in the development of the art. It is the main object of this biography to establish firmly his claims as a discoverer, and to show that Reade is at least entitled to a full share of the distinction in which the name of Fox Talbot [8] has been held for over half a century.

[Head of the Flea (J B Reade_W L Aldous).jpg - Caption, Head of the flea J. B. Reade/ W. Lens Aldous c 1837]

In February 1841 Fox Talbot took out a patent for his "calotype" process.[5] This was the third British patent for photography, the two previous ones having been for nothing more advanced than the daguerreotype process. Reade's claims rest on the fact that two years previously, early in 1839, he had discovered and successfully applied the fundamental principle of this patent. He does not appear, however, to have made any attempt, at this early period, to urge his claims publicly. It was not until August 1847 that Sir David Brewster, in an unsigned article on "Photography" in the North British Review (p. 470), gave credit to Reade for his discoveries.

Sir David Brewster wrote as follows: *" The communications of Mr Talbot to the Royal Society could not fail to draw the attention of philosophers to so curious an art, and we accordingly find the Rev. J. B. Reade, F.R.S., a gentleman to whom the sciences owe valuable obligations, had made important additions to the photogenic processes, and had himself applied them to the delineation of objects of natural history, of which he took pictures by the solar microscope."*

The following process was communicated by Mr Reade, on the 9th of March, 1839, to E. W. Brayley, Esq [6]., who explained the process and exhibited the drawings referred to at one of the soirees of the London Institution on the 10th of April, 1839.

"The more important process, and one probably different from any hitherto employed, consists in washing good writing paper with a strong solution of nitrate of silver, containing not less than 8 grs. to every drachm of distilled water. The paper thus prepared is placed in the dark, and allowed to dry gradually. When perfectly dry, and just before it is used, I wash it with an infusion of galls prepared according to the Pharmacopeia, and immediately, even while it is yet wet, throw upon it the image of microscopic objects by means of the solar microscope.

It will be unnecessary for me to describe the effect, as I am able to illustrate it by drawings thus produced. I will only add, with respect to the time, that the drawing of the flea was perfected in less than five minutes, and the section of cane, and the spiral vessels of the stalk of common rhubarb, in about eight or ten minutes. These drawings were fixed by hyposulphite of soda. They may also be fixed by immersing them for a few minutes in weak salt and water, and then, for the same time, in a weak solution of hydriodate of potash. The drawing of the Trientalis Europea was fixed by the latter method: it was procured in half a minute, and the difference in the colour of the ground is due to this rapid and more powerful action of the solar rays. This paper may be successfully used in the camera obscura.

Farther experiments must determine the nature of this very sensitive argentine preparation. I presume that it is a gallate or tannate of silver, and if so, it will be interesting to you to know that what has hitherto been looked upon as a common chemical compound is produced or suspended at pleasure by our command over the rays of light."

Sir David remarks: *"This process cannot fail to be considered as highly honourable to the ingenuity of Mr Reade. The first public use of the infusion of nut-galls, which, as we shall see, is an essential element in Mr Talbot's patented process, appears to be due to Mr Reade, and his process of fixing his pictures by hyposulphite of soda, which has since been universally used as the best, and was afterwards suggested in 1840 by Sir John Herschel, must be regarded as an invaluable addition to the photographic art"*

In 1854 Fox Talbot was allowed to renew his patent of 1841, a circumstance which caused his priority of discovery to be disputed by Reade in several published letters. The earliest seems to be one which appeared in the Philosophical Magazine for May 1854 (pp-326-31), under the title of "*On some early Experiments in Photography, being the substance of a Letter addressed to Robert Hunt Esq, by the Rev. J. B. Reade, M.A., F.R.S.*" The letter was dated from Stone Vicarage, 13th February 1854, and the most important part of it was reprinted in Notes and Queries for 3rd June 1854 (1st Series, vol. ix, pp. 524-5).

Shortly after this, Reade was stimulated by some of Fox Talbot's assertions to address him personally in the following letter: [11]

Stone Vicarage, Aylesbury, June 24, 1854.

Dear Sir,

On my return home after some days' absence, I find my attention called to an extract from your affidavit referring to my use of infusion of galls as a photogenic agent. I feel it due to you to state without delay, that there is abundant proof of my use of infusion of galls for the purposes mentioned in your specification, and of my publication of it as forming "a very sensitive argentine preparation" two years before your patent was sealed. Ever since the publication of an extract from my letter to Mr Brayley in the North British Review for August 1847, which, from the tenor of your affidavit, I conclude that you never saw, my claim has been fully recognised in several of the popular manuals. The following is a quotation from one published by Willats: "The Calotype or Talbotype is, as we have already mentioned, the invention of Mr Fox Talbot, or is claimed by him. To this the editor adds the following note : "So early as April 1839 the Rev. J. B. Reade made a sensitive paper by using infusion of galls after nitrate of silver: by this process Mr Reade obtained several drawings of microscopic objects by means of the solar microscope; the drawings were taken before the paper was dry. In a communication to Mr Brayley, Mr Reade proposed the use of gallate or tannate of silver; and Mr Brayley, in his public lectures in April and May, explained the process and exhibited the chemical combinations which Mr Reade proposed to use."

You may perhaps have forgotten that, at the Meeting of the British Association at Oxford,[7] I had a short conversation with you on your own coloured photographs. I introduced myself to you as a relative of your friend and neighbour, Sir John Awdry [8] and I informed you that I had used infusion of galls for microscopic photographs and fixed with hyposulphite of soda, before you took out your patent.

The effect of gallic acid or the infusion of galls in developing an invisible image was discovered accidentally by me, as I believe it was also by yourself, and it is certain that no one could use this photogenic agent as we have done without discovering one of its chief properties. I may state that I have often been asked to oppose your patent; but I had no wish to meddle with law, or to interfere with the high reputation which your discovery of a process, named after yourself, secured to you by which " paper could be made so sensitive that it was darkened in five or six seconds when held close to a wax candle, and gave impressions of leaves by the light of the moon." This however was both subsequent to my own use of gallate of silver, of which you appear never to have heard, and also essentially dependent upon it. My nitro-gallate paper, which I used successfully with the solar microscope, the camera, and an Argand lamp, was far more sensitive than any which preceded it; and I considered the important question of fixation to be set at rest by the use of hyposulphite of soda, which I have no doubt you employ yourself, in preference to your own fixer, the bromide of potassium. In fact, by my process, which, as I state in my letter to Mr Brayley, was the result of numberless experiments, the important problem was solved, inasmuch as good pictures could be rapidly taken and permanently fixed. My principal instrument was the solar microscope; and while you failed, as you state in your first paper at the Royal Society, to obtain even an impression after an hour's exposure, and were disposed to give up this experiment in despair, though you afterwards obtained small pictures in about a quarter of an hour, I had succeeded in producing and developing at one operation of less, and sometimes much less than five minutes' duration, the beautiful Solar Mezzotints, as I termed them, varying in size from 50 to 150 diameters, which were exhibited in 1839 at the Marquis of Northampton's, and at the London and Walthamstow Institutions ; and some in the spring of that year were even sold at a Bazaar in Leeds in support of a charitable fund. The process was explained to my friends in Yorkshire, [9] and I find from a Leeds manuscript that I proposed the nitro-gallate paper "for immediate use and diffused daylight." The ammonio-nitrate process also, which does not seem to have any definite parentage, though I believe included in your second patent of June 1843, was among the first which I employed, and probably I was the first to suggest it. At all events I may give you as a matter of history the following extract from a letter to my brother [10] in Leeds, dated April 26, 1839:" Dissolve 6 grains of nitrate in 3j of water and add liquor ammonia, which will throw down the brown oxide of silver, but on the addition of a little more will take it up and form a clear solution. Wash the paper and dry it. Then put 9j of common salt in half a pint of distilled water. Wash the paper with this mixture, &c." I also propose to dissolve two grains of gelatine in one ounce of distilled water as an accelerator for the nitrate, as well as to fix with hyposulphite of soda. Had Mr Brayley's lectures been printed, you would probably have become acquainted with my processes, as well as with those of other photographers, which were explained and illustrated by him. At all events I have never ceased most emphatically to make the claims which in your affidavit you deny to me, and therefore, for the sake of furnishing a correct history of the progress of the art, I must be allowed to print this letter, as the only means left to me of meeting the case.

I am sure that the art now so far advanced, and still advancing, has our best wishes. Mr Grove would present to you in my name a copy of my letter to Mr Hunt, which was written before I had heard a syllable of your present actions.

Believe me to be,

Dear Sir,

Yours faithfully,

J. B. READE.

Henry Fox Talbot, Esq.

Towards the end of 1854, Fox Talbot brought an action against Mr Laroche, a photographic artist working on the collodion system, for infringing his first patent known as the "Talbotype." The trial took place in the Court of Common Pleas before Lord Chief Justice Jervis and a special jury, and lasted from Monday the 18th till Wednesday the 20th December 1854.[11] Reade was the principal witness for the defendant.

"*The defendant rested his case on two grounds: first, that the plaintiff's invention was not new, as the process had been discovered and communicated to the public in 1839 by the Rev. J. B. Reade; and next, that the collodion process was altogether different from the Talbotype, and therefore no infringement of the patent. The Rev. J. B. Reade, who is now vicar of Stone, near Aylesbury, was examined; and gave evidence, that when he lived at Peckham, he had in the course of experiments discovered two processes for obtaining sun-pictures. He knew that Sir H. Davy [12] had stated that leather was more sensitive to light than paper; and he therefore, by means of chloride of silver with an infusion of galls, obtained an image which he fixed with hyposulphate of soda. By these means he produced the picture of a magnified flea, and other objects, which he exhibited at a soiree given in 1839 by the late Marquis of Northampton [13] to the Royal Society. Mr Reade, by his second process, used cards glazed with carbonate of lead; he washed these cards with acetic or muriatic acid, and then floated them in iodide of potassium, so as to produce an iodide of lead. He next washed the surface of the card with nitrate of silver, and obtained the image by superposition, while he washed it with an infusion of galls. The effect of the sunlight was immediately to blacken the cards. He fixed the image in the same way that he used in the first process. He was once surprised to find that a figure was brought out after the paper had been momentarily exposed to the light, but he had no idea of the mode of developing the invisible image, until he read the account of Mr Talbot's discoveries. Mr Reade communicated the results of his experiments in a letter to Mr Brayley, who read the letter at two lectures given by him in 1839 on photography; but the letter made no mention of the use of iodide of potassium in the experiment of the glazed cards.*"

The law therefore decided that the fact of Reade's iodised pictures having been exhibited by Mr Brayley did not constitute what is legally known as "*publication*". Had Reade only described the iodising process in his letter, it would apparently have upset Fox Talbot's patent.

On the 12 December. 1859, Mr Lyndon Smith of Leeds, who was preparing a lecture on photography to be delivered at the Church Institute there, wrote to Reade asking him for definite particulars as to his early connexion with the art. "*My reading*," said Mr Smith, "*certainly inclines me to think that photography on paper owes more to you than to anyone, and that Fox Talbot has received far too large a share of the honour of the invention.*"

Although Reade has never received much popular recognition for his discovery, his priority over Fox Talbot has been fully admitted by experts. Sir William de W. Abney, F.R.S., in his article on "Photography" in the Encyclopaedia Britannica, published in 1885, acknowledges Reade's claims and says: "The priority of the discovery was claimed by Fox Talbot; and his claim was sustained after a lawsuit, apparently on the ground that Reade's method had never been legally published." And the same distinguished writer in his *Treatise on Photography* says: [14] "The Rev. J. B. Reade was also an ardent experimentalist in this process, and to him is to be ascribed the discovery of the accelerating power of gallic acid, in the presence of silver nitrate, for the production of an image, and also for the development of the invisible image by the same agency. From this discovery, together with that of Daguerre's, Fox Talbot reasoned out the calotype process, which he patented in 1841."

In the obituary notice of Fox Talbot in Nature for October 1877, the true facts are also given. "Early in 1840 a new process due to Talbot created a sensation in scientific circles, the results being a marked advance on everything that up to that time had been produced. . . . The credit of the discovery

of this method of development has often been ascribed to Fox Talbot; but we believe that to the Rev. B. J. (sic) Reade it is really due, but was so modified by Fox Talbot as to render it manageable in the hands of the operator."

Reade was all his life an enthusiast in the use of the microscope. In 1839 he called special attention to the value of background illumination, and in 1840 read a paper before the Royal Society "On the construction and use of single achromatic eye-pieces." In 1842, in two communications to the Royal Microscopical Society, he pointed out the great assistance which chemistry might derive from the use of the microscope, and stated that so small a quantity of hydrogen as the ten-thousandth part of a grain could be detected with certainty by that instrument, if existing as a constituent of ammonia. He also pointed out that ammonia was a product of respiration, a fact which did not gain immediate acceptance though justice was subsequently done him by Sir Benjamin Ward Richardson, M.D., F.R.S., in his essay on "Coagulation of the Blood," which gained the Astley Cooper triennial prize of 300 guineas in 1856. Richardson thus acknowledges Reade's discovery. "The paper on 'Ammonia evolved in Respiration,' by Professors Latini and Viale, referred to in the table of Authors, is of moment as corroborating many of the views adduced in this work. These gentlemen, by a series of independent labours, arrived at the fact that ammonia is thrown off in the expired air. I need scarcely say, that their labours, original as far as the authors were concerned, were many years before fully anticipated by the researches of our countryman, the Reverend J. B. Reade."

In 1850 he communicated an account of a new solid astronomical eye- piece of his own invention to the British Association. In 1851 he exhibited this at the Great Exhibition, and it was thought so well of as to be specially mentioned. In 1861 he described before the Royal Microscopical Society his "*New Hemispherical Condenser for the Microscope.*" This is commonly known as "*Reade's Kettledrum*" and he modified it later by the addition of two lenses. In 1869 he invented the equilateral prism for microscopic illumination which has gone by his name, and which he described in the Monthly Microscopical Journal for the same year. This invention was of great value, especially to those engaged in the study of diatoms and other minute objects.

Reade wrote various papers dealing with his microscopic investigation of different objects and organisms. In the Annals of Natural History for 1839 he wrote a paper "*On some new organic remains in the flint of chalk.*" He wrote several papers dealing with the form and chemical composition of vegetable tissue and fibre. In 1839 also he contributed a paper on Roman coin-moulds to the Numismatic Chronicle.

The Rev. Joseph Bancroft Reade died on Monday the 12th December 1870, at five o'clock in the morning, at Bishopsbourne Rectory, during his second year of office as President of the Royal Microscopical Society, and while Vice-President of the London Photographic Society. His death was announced two days later at a meeting of the Royal Microscopical Society, by his old friend Dr Millar, in the following terms:

"It is my painful duty to inform you that our President is no more. In February last he first complained of illness, which gradually increased in severity so that it was with difficulty he presided at the last meeting of the session in May; it was then his friend Dr Richardson examined him, and pronounced him to be suffering from incipient cancer, in a place which forbade all hope of removal by operation. From this time his downward course has been very marked he gradually but steadily lost flesh, did not suffer so much pain as I expected, and calmly sank without a struggle on the morning of the 12th. I last saw him alive on Tuesday, the 7th, when I spent several hours with him, receiving instructions with reference to various matters. He was then very much changed, and it was clear his days were drawing to a close; he spoke to me in the most calm, clear, and collected manner, and referred to his approaching end with the utmost tranquillity. He took an interest in our Society to the last, spoke of the changes likely to be made, and requested me to present in his name a microscope which is an exact counterpart of his first one made by Dolland and presented to him by his father when he was 15 years old… I do not know that this is the place for me to refer to it, but I desire to add that a more calm, contented, and happy frame of mind than he was in it is impossible to conceive, and I can only wish that my last end may be like his." The following resolution was then passed unanimously: "That this Society learns with the deepest regret the loss it has sustained by the decease of its President, the Rev. Joseph Bancroft Reade, M.A., F.R.S., who by his scientific attainments, useful inventions, and numerous important observations rendered great service to microscopical science; while his high character and amiable manners endeared him to all who were honoured with his friendship and favoured with his acquaintance."

He was buried in Bishopsbourne Churchyard on Friday, the 16th December, the service being read by the Rev. Lewis Clarke, curate of Bridge, one of his dearest friends. In addition to the relatives, there were many representatives of the various branches of science in which he was interested, but "the funeral was as unostentatious as the man whose dust was then committed to the dust."

The various obituary notices all contain tributes to the lofty character, the rare modesty, and the gentle disposition of Joseph Bancroft Reade. The notice in the Monthly Microscopical Journal thus concludes: "As one of the founders of the Society, and one who for thirty years has always taken a warm interest in its success, he will be long remembered by all who knew him, not only for his striking appearance, but for his kind and genial disposition, and his readiness to impart from the rich stores of his knowledge any information he possessed."

Notes

Much has been written in the years following A. L. Reade's chapter in "The Reades of Blackwood Hill and Dr Johnson's Ancestry" on the subject of the Rev. J. B. Reade and his early work concerning photography. Most of it is readily available on the internet.

Some of that which has been written sets out to disprove J. B. Reade's role in early photography, much of which was never actually claimed by the man himself and is consequently quite controversial.

He was, after all, just an amateur microscopist and a country Clergyman.

The Rev. J.B Reade M.A. FRS was a gentle soul, very interested in the world around him, and never sought fame or fortune. He lived in an age when science was in its heyday, an age of invention and discovery and nobody can deny him his part in that.

I believe that our world today is a better place for his being a part of it, even although time itself has dimmed the record of the truth of his place in it.

He was one of the Founders of our great Royal Microscopical Society; let us be thankful to him for that alone.

Footnotes

1 *My principal authorities for the general facts of this life are, the Dictionary of National Biography; Monthly Microscopical fournal, 1871, vol. v, p. 92; an obituary notice of him in the Kent Herald; British Journal of Photography, 16 December 1870; and other books and periodicals referred to as they are quoted. Mr Paley Baildon has also lent me various papers and extracts. All previous biographies have been quite short, the longest being that in the Monthly Microscopical Journal, which is however badly expressed and difficult to follow clearly. I have taken special pains to explore the subject of Reade's connexion with the early history of photography and to present all the evidence as fully as possible. Twenty-five papers by him are enumerated in the Royal Society's Catalogue of Scientific Papers (vols, v, p. 114, viii, p. 710). A good portrait of him will be found in G. C. Wallich's Eminent Men of the Day, 1870, which is merely an album of 16 original photos of leading scientific men.*

2 *John Scott [1777-1834], Vicar of St. Mary's, Hull, from 1816; wrote an ill-constructed life of his father, Thomas Scott, the commentator; uncle of Sir Geo. Gilbert Scott, R.A.; see D.A.B.*

3 *To the Gentleman's Magazine for August 1853, John Yonge Akerman, F.S.A., contributed some "Extracts from the register books of the parish of Halifax" explaining that they "were made by my friend the Rev. J. B. Reade, when serving the office of curate about twenty years ago."*

4 *Both these papers are quoted by Gideon Algernon Mantell, F.R.S., in his Wonders of Geology, 184S, pp. 711-12 and S74. In the Appendix to the same work (pp. 905-6), he gives a letter from "my friend Mr Reade," in pursuance of the same subject, on fossil infusoria.*

5 *Talbot's process consisted in producing the photographic image on writing paper highly sensitised by chemical treatment. White images of the objects were formed after a long exposure upon a dark ground, these being the 'negatives,' from which 'positives' could be obtained by printing in the manner still employed.*

"In September 1840 Talbot greatly improved and accelerated the procedure by employing paper rendered sensitive by iodide of silver and nitrate of silver. This paper received in the first few seconds of its exposure to the light an invisible image, which could be rendered visible by treating it with a solution of gallic acid This improved method, at first called the ' calotype,' and afterwards the 'talbot type,' was the foundation of the photography of the present day. Talbot patented it on 8 February 1841, but his claim to priority of invention in regard to this phase of the development of photography directly conflicts with that of Joseph Bancroft Reade.- Dict, Nat. Biog., under William Henry Fox Talbot.

6 Edward William Brayley [1802-70], F.R.S.

7 *The British Association met at Oxford in June 1847.*

8 *Sir John Wither Awdry [1795- 1878], M.A., D.C.L.J.P., D.L., of Notion House, Wilts., sometime Chief Justice of Supreme Court, Bombay ; married in 1839, as his second wife, Frances Ellen, second daughter of Thomas Carr, D.D., Bishop of Bombay, by Elizabeth Matilda his wife, eldest child of James Farish. Lady Awdry was therefore niece of Mrs. Reade.* *See p. 99.*

9 *Henry Clifton Sorby, F.R.S., the eminent petrologist, in his presidential address to the Geological Society of London, 20 February 1880, said, in referring to the late John Waterhouse [1806-79], J-P-. D.L., F.R.S., of Halifax: His favourite studies were astronomy, geology, electricity, and light ; and in connection with the latter he was identified with the early progress of photography, and with the discovery by the Rev. J. B. Reade, F.R.S., of the method of taking portraits first upon leather, and afterwards upon paper, instead of silver plates or glass, and also with the chemical means of giving permanence to such images."*

10 *This can only refer to his youngest brother Samuel Reade, aged 17, who was then living at Leeds with his father.*

11 *A report of the trial appeared in the Tunes and was reprinted in Notes and Queries for 30 December 1854 (1st Series, vol. x, pp. 528-30.*

12 Sir Humphry Davy [1778-1829].

13 Spencer Joshua Alwyne Compton [1790-185 1], 2nd Marquess of Northampton, who was President of the Royal Society from 1838 to 1849.

14 10th Edition, 1901, page 5.

Biography

Malcolm J Reade FIED FRMS M.Inst.M&C(S.A.) is a keen amateur microscopist and a professional Nuclear Engineer specialising in the design of bespoke instrumentation for measuring hydrogen evolution in corroding legacy nuclear waste. He is a Fellow of the Institution of Engineering Designers, a Fellow of the Royal Microscopical Society and a Senior Member of the South African Institute of Measurement and Control. He lives in a village to the north of Northwich in Cheshire with his wife of 34 years, Carol.

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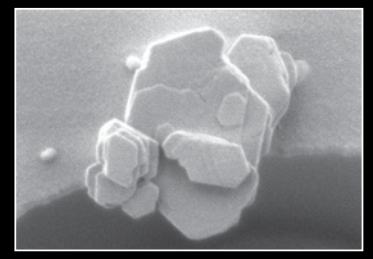
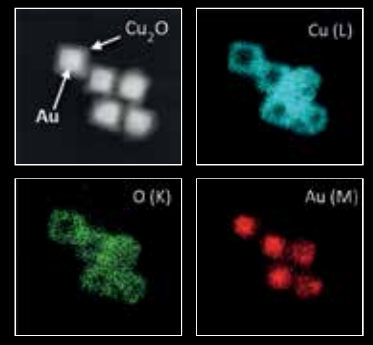


Kaolin, 50v, 150kx 400nm



EDX analysis of Au/Cu2O core-shell nanocubes 5kV, 0.7nA, 15min

Acquired with Oxford Instruments Xmax150
Sample courtesy: Institute for Chemical Research, Kyoto University Prof. Toshiharu Teranishi

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