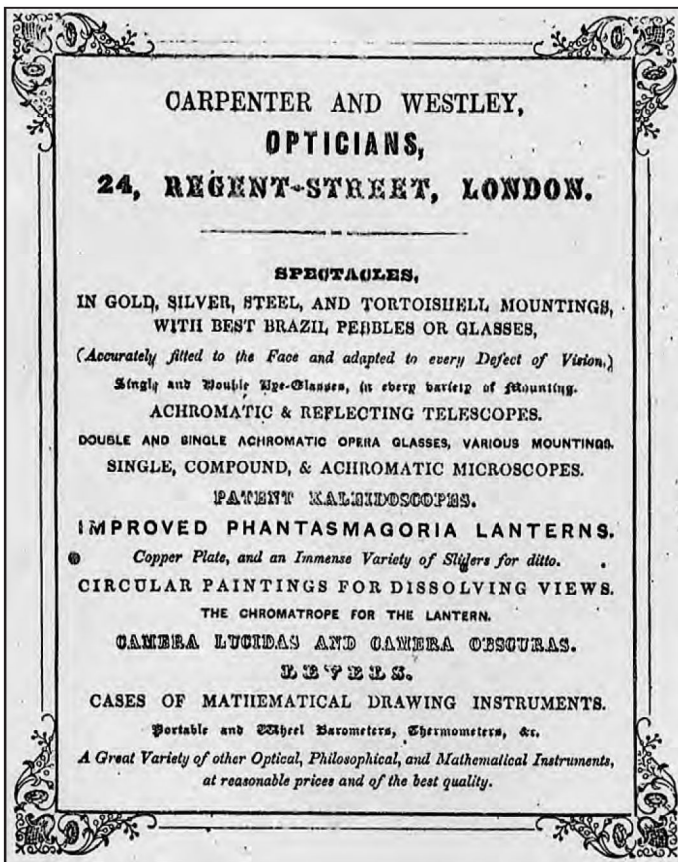


THE PERFECTIONIST PROJECTIONIST

PHILIP CARPENTER, 24 REGENT STREET, LONDON

Stuart Talbot



1. Carpenter and Westley trade card, c.1835 (Lester Smith Collection)

PHILIP CARPENTER (1776–1833), born in Kidderminster, Worcestershire, on 18 November 1776, had a brilliant optical understanding and, in just 25 years of unsurpassed technical ambidexterity, led the world in both magic lantern projection and microscopical magnification. Abiding proof remains with his apparatus and the records of his public ‘Microcosm’ exhibition, which achieved great celebrity when George IV of England was King.

Carpenter died at Regent Street on 30 April 1833 and the business (Fig. 1) was continued by his sister Mary in partnership with William Westley (died 1887), an early Birmingham apprentice to Carpenter, who became foreman, and later on a partner, and ultimately sole principal.¹

This article examines the transition from Carpenter’s beginnings in the Birmingham optical trade in Inge Street in 1808, to a house and ‘manufactory’ at Bath Row with shop premises at 111 New Street in 1815, and later at 33 Navigation Street, Birmingham. After just 18 years in Birmingham, Carpenter’s sudden expensive relocation to the heart of London in July 1826 confirms his eminence. The business became Carpenter & Westley in 1835 and this name would continue in Regent Street until the 1920s.² Birmingham was at the forefront of the Industrial Revolution and Philip Carpenter’s career epitomises this epoch.

The *Resources, Products and Industrial History of Birmingham*

edited by Samuel Timmins, published in 1866, quotes:

About 1808, Mr Philip Carpenter, the founder of the firm of Carpenter & Westley, commenced business in Birmingham in a more systematic manner than had been known before. Achromatic lenses had raised telescopes from mere toys to philosophical instruments and Mr Carpenter soon established a large trade, and supplied even Dollond [Peter Dollond, 1731–1820] himself with large numbers of telescopes bearing his famous name. [...] In 1826, Mr Carpenter made the first solar microscope, which he took to London, and exhibited as the ‘Great Microcosm’, and exhibited a great furore by its novelty and power.³

The supervision by Carpenter of mass-producing multiple achromatic lenses, ground to required specifications, advanced his optical theory and practice. By this process he rapidly became the leading supplier of achromatic lenses to the British optical trade after 1812 and this became the real key to his influence. Contact and consultation with the younger generation of ‘achromatic opticians’ like James Smith, Hugh Powell, Andrew Ross and John Benjamin Dancer, who in turn made many instruments for Carpenter, ensured his rapid ascent to the peak of his profession.⁴

It is also important to note the parallel development of oxy-hydrogen gas illumination in Birmingham: in 1804 Matthew Boulton and James Watt sold their first lighting plant. In 1807 the first street lighting was installed in Pall Mall, London, by the National Light and Heat Company (afterwards called the Gas Light & Coke Company) which was granted a licence nationwide in 1810. In 1813 Westminster Bridge was first lit by gas and by 1816 London generally was lit.⁵ Carpenter’s shop in Regent Street, on the corner of Jermyn Street, was therefore perfectly situated to take full advantage of the oxy-hydrogen gas essential for his magic lantern and lucernal microscope illuminations.

KALEIDOSCOPES

Carpenter was associated with Sir David Brewster (1781–1868) as one of the chosen manufacturers of the Patent Kaleidoscopes in 1817. These became a huge money-spinner, as over 200,000 kaleidoscopes were sold in Paris and London during three months. Carpenter’s models were stamped ‘Sole Maker’. Brewster’s letter to his wife of 17 May 1818 states he sought Carpenter’s permission to allow other makers to produce similar examples as Carpenter could not possibly supply the demand.⁶ These instruments remained a staple in the firm’s catalogue for 60 years.

MAGIC LANTERNS

Carpenter’s enormous success dates from 1821 with his own Phantasmagoria Lanterns – the effect was achieved by a brilliant optical illusion by interposing a large damp muslin screen, which in a darkened room was hardly visible, and thus the image appeared to be suspended in the air. It was a sensation in its day.

The remarkable popularity of the multiple series of his own ‘copper-slides’ made by his secret copper-plate printing/burning process on glass afforded mass reproduction. These slides were made available in many series of entertaining and serious scientific subjects, many later painted individually by hand, and these caused a genuine revolution. The slides were the financial foundation of the

ACKNOWLEDGMENTS

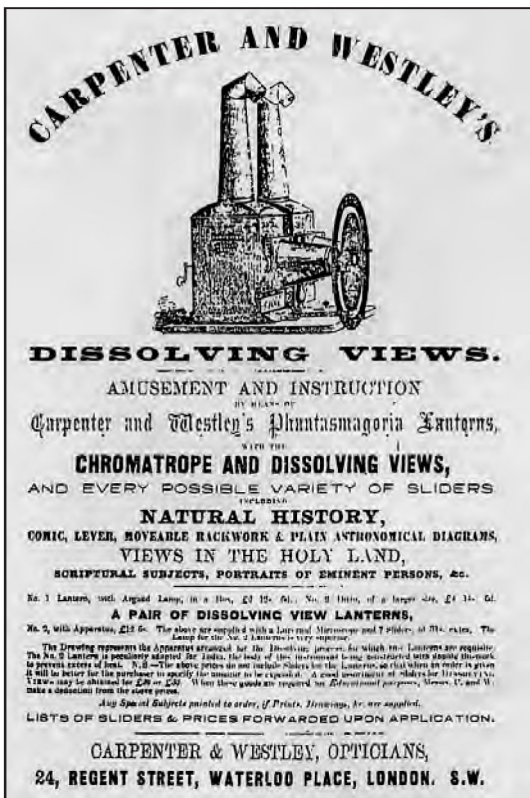
Sincere thanks to Professor Gerard Turner, Dr Alison Morrison-Low, Dr Brian Gee, A.V. Simcock, Roger Few, David Robinson and Lester Smith.

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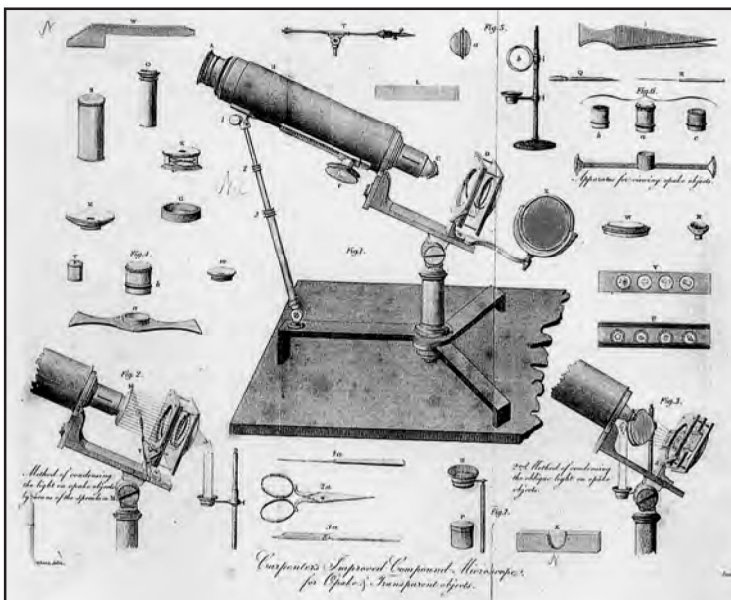
NOTES

1. *Modern London* (Historical Publishing Co., 1899), 90.
2. See the entries in Gloria Clifton, *Directory of British Scientific Instrument Makers 1550–1851* (London: Zwemmer / National Maritime Museum, 1995), 49.

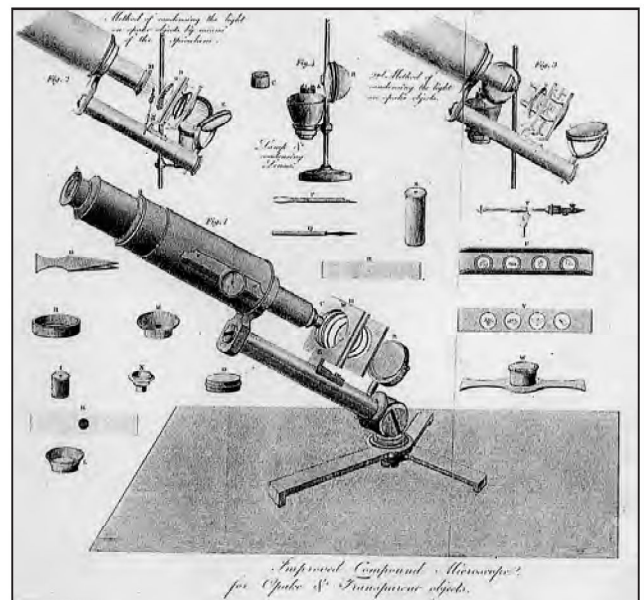
3. Samuel Timmins, *The Resources and Products and Industrial History of Birmingham* (London, 1866), 534. Timmins implies that Carpenter made the first solar microscope which is, of course, not correct. However, he may well have put together the first permanent solar microscope exhibition.
4. Frederick W. Price, ‘A Carpenter Microscope’, *Bulletin of the Quekett Microscopical Club* No. 38 (2000), 4–10.
5. Josie A. Marsden, *Lamps and Lighting*, (London: Guinness Publishing, 1990).
6. A.D. Morrison-Low and J.R.R.Christie (eds), *Martyr of Science: Sir David Brewster 1781–1868* (RSM Symposium, 1981), 62–3 and Cat. 7, Fig.18, 86.



2. Carpenter and Westley trade card depicting their 'dissolving view' twin lantern, c.1835 (Lester Smith Collection)



3. Carpenter's Improved Compound Microscope (author's collection)



4. Carpenter's Most Improved Compound Microscope (author's collection)



5. Philip Carpenter's shop, 24 Regent Street, at the corner of Jermyn Street, London – drawing by Georg Scharf, 1828 (courtesy of the Trustees of the British Museum)



6. Carpenter's shop front – drawing by Georg Scharf, 1828 (courtesy of the Trustees of the British Museum)

firm's well-being for nearly the rest of the 19th century until its demise in the 1890s. The mechanical slides, especially the famous astronomical series, and the many and varied categories retain their design hallmark of an enduring built-to-last quality.

Both Carpenter's *The Elements of Zoology* (1823)⁷ and his printed lecture *Companion to the Magic Lantern* (1823) were great presentational advances. Additional refinements included the Chromatrope, where two interacting rotating discs produced complex kaleidoscopic images, and the remarkable 'Dissolving Views' twin lanterns (Fig. 2).⁸ These optical projection successes without doubt financed his move to the heart of London at 24 Regent Street in 1826.

CARPENTER'S MICROSCOPES

Leading opticians between 1820 and 1833 who were unlocking the mysteries of the achromatic microscope objective included James Smith (until 1838 foreman at Tulley and Sons of Islington), Hugh Powell, Andrew Ross and J.B. Dancer. These younger generation opticians also made and supplied the Carpenter Microscopes to his design specifications. Carpenter's only known catalogue, of just 16 pages from 1834, notes: 'microscopes are all securely packed in neat French-polished mahogany cases'⁹

Indeed they are remarkable for their presentation in Regency period bevelled-edge mahogany boxes with superb flame-mahogany veneers to the outer lid and plush velvet cushions to the inner lids. The addition of an oil or Argand lamp for extra illumination as a top option was another innovation. This attention to technical design, build-quality and boxed presentation with the exceptional opaque and transparent specimen slides that accompanied all his microscopes, is the reason Carpenter's reputation is so highly rated.

Perhaps the finest example extant of Carpenter's 'Improved, Opaque and Transparent Compound Microscope', priced at £30 in the 1834 catalogue, can be seen in Museum of the History of Science in Oxford and is pictured on page 100

of Gerard Turner's 1981 classic introduction to *Collecting Microscopes* (Studio Vista/CSK, 1981). Engraved plates taken from Carpenter's leaflets which accompanied his 'Improved' microscopes are seen in Figs 3 and 4, at 14 guineas and £21 respectively in the 1834 catalogue.¹⁰

CARPENTER'S MICROCOSM

Philip Carpenter himself published a commentary, the only copy of

7. The full title of this small volume is *Elements of Zoology: being a concise account of the animal kingdom, according to the system of Linnaeus* (London, 1823).⁷⁷
8. David Robinson, Stephen Herbert and Richard Crangle (eds), *Encyclopaedia of the Magic Lantern* (London: Magic Lantern Society, 2001), 56–7. Dennis Crompton, Richard Franklin and Stephen Herbert (eds), *Servants of Light: the book of the lantern* (London: Magic Lantern Society, 1997), 19–20 illustrates an actual example of the dissolving lanterns and also a close-up of an engraving similar to the trade card in Fig. 2.
9. *A Catalogue of Optical and Mathematical Instruments manufactured and sold by P. Carpenter, Microcosm, No. 24 Regent Street* (1834) – the only surviving copy is in the Museum of the History of Science Oxford Archive Library.
10. *Ibid.*



7. 'Monster Soup commonly called Thames Water', 1828 cartoon by William Heath, inspired by Carpenter's 'Great Microcosm' exhibition (Guildhall Library Collection, London)

which remains in the British Library.¹¹ Fortunately two period drawings (Figs 5 and 6) of Carpenter's shop at 24 Regent Street were made by the illustrator Georg Scharf (1788–1860). Above the doorway are the inscriptions 'P. Carpenter Optician' and above 'MICROCOSM', and the upper door-glass is lettered 'Microcosm open from Eleven till Eight'.¹²

A wonderful coloured etching dating from 1828 (Fig. 7), 'Monster Soup commonly called Thames Water' by William Heath (c.1795–1840) was inspired by Carpenter's lucernal projections, as demonstrated by the well-known 'Microcosm' Trade Advertisement (Fig. 8).¹³ Clearly this unique exhibition on the 'Wonders of Nature' caught the public imagination and was possibly petrifying.

The late John Millburn suggested that 'the window in the room above Regent Street appears to incorporate some sort of apparatus which could have been the solar collector'.¹⁴

A contemporary description of the Microcosm Exhibition was published in 1828 in *Arcana of Science* – a rare copy belongs to Lester Smith, who has kindly consented to this reproduction of the text:

Microscopical Exhibition

A unique Microscopical Apparatus, on a scale of great magnitude, has very recently been established in Regent-street, London by Mr Philip Carpenter, optician. It consists of a truly magnificent collection of microscopes, and well-selected objects that we cannot avoid earnestly recommending our readers to avail themselves of an early visit of it.

They chiefly consist of twelve lucernal microscopes, of great length and size, and which are kept constantly fixed in the most convenient and favorable position for using them; their foci being also adjusted, so that the observer has only to change the objects from time to time, at pleasure, by merely turning a large milled head, made of brass, which, by means of a long rod, communicates with the supports of them; these are the facilities hitherto un-possessed by any instruments of the same description which we have met with, and which renders the use of the microscopes exceedingly easy and convenient.

There are generally three sets of objects to each microscope, and these are also changed from time to time, so that novelty will never be wanting in this pleasing exhibition. The Objects are held in glazed frames, and are exposed on the outside of the house, to the full influence of daylight, and, at night, are illuminated by lamps the flames of which are reflected upon the objects by adjusting speculums. Some of the objects are placed at the distances of from six to nine feet from the eye of the observer; and the lenses, in the body of the microscopes, are several of them from nine to sixteen inches in diameter, and have cost a very considerable sum in the fabrication.



8. 'Microcosm' Trade Advertisement, c. 1827 (original in the Court Collection, Science Museum, London)

By this judicious arrangement, the pleasure arising from the inspection of the minute and most exquisite works of creation, on a greatly magnified scale, is brought within the reach of everyone, not only of the scientific world, but of the public in general, and who are thus afforded a treat, hitherto enjoyed by the few who possessed good microscopes and the requisite skill to use them, skill which was only to be acquired by long practice.

Among the opaque objects, the diamond curculio forms, as it ought, a conspicuous one. It is exhibited entire, on a magnificent scale, and also in separate parts, still more magnified. In the transparent ones, the eels in paste are beautifully shewn, also the cheese mites and the water fleas, alive and exerting their peculiar movements.

Mr Carpenter has also fitted up a large concave speculum, in a peculiar manner, so as to exhibit magnified views of larger objects, exceedingly well lit and defined; as, for instance, two large Indian cerambyxes, a locust, with its wings fully displayed, and a coralline. These are also viewed with both eyes open, an advantage which cannot be obtained in the other instruments, which, however, does not fatigue the eye of the observer in the least degree.¹⁵

This is just a brief reminder of Philip Carpenter's many inspired and creative contributions to the field of optics and the wonders of projection – his career has enduring fascination to followers of the history of the Magic Lantern and the Microscope.

STUART TALBOT is a dealer in antique scientific instruments, now based in Freiburg-im Breisgau in Germany after 38 years in London's Portobello Road. He still exhibits at the biannual Antique Scientific Instrument Fairs in London. He was Chairman of the Scientific Instrument Society from 1997 to 2001.

11. Philip Carpenter, *A Companion to the Microcosm* (1827). A copy is in the British Library, shelfmark T.1572.(5.). *The Theatrical Observer*, No.1,770 (Saturday 11 August 1827) gives an Exhibition review: 'Microcosm – a Grand Display of the Wonders of Nature'. See also R.H. Nuttall, 'Carpenter and the Microcosm Exhibition', *Microscopy*, 33 (July–December 1976).

12. 'Drawings by Georg Scharf, letter from Peter Delehar, *SIS Bulletin* 23 (1989), 21.

13. 'Monster Soup commonly called Thames Water', 1828 etching by

William Heath (c.1795–1840). A copy is in the Guildhall Library Collection, London, and was reproduced on a postcard in 1987. For Carpenter's trade card see H.R. Calvert, *Scientific Trade Cards in the Science Museum Collection* (London: HMSO, 1971), Cat. No. 71, plate 15.

14. 'Carpenter's Microcosms', letter from John R. Millburn, *SIS Bulletin*. 24 (1990), 18.

15. *Arcana of Science* (1828), Vol. 1, 14-15.