

# **The development and growth of British photographic manufacturing and retailing 1839-1914**

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## **Abstract**

This study presents a new perspective on British photography through an examination of the manufacturing and retailing of photographic equipment and sensitised materials between 1839 and 1914. This is contextualised around the demand for photography from studio photographers, amateurs and the snapshotter. It notes that an understanding of the photographic image cannot be achieved without this as it directly affected how, why and by whom photographs were made.

Individual chapters examine how the manufacturing and retailing of photographic goods was initiated by philosophical instrument makers, opticians and chemists from 1839 to the early 1850s; the growth of specialised photographic manufacturers and retailers; and the dramatic expansion in their number in response to the demands of a mass market for photography from the late 1870s. The research discusses the role of technological change within photography and the size of the market. It identifies the late 1880s to early 1900s as the key period when new methods of marketing and retailing photographic goods were introduced to target growing numbers of snapshotters. Particular attention is paid to the role of Kodak in Britain from 1885 as a manufacturer and retailer.

A substantial body of newly discovered data is presented in a chronological narrative. In the absence of any substantive prior work this thesis adopts an empirical approach firmly rooted in the photographic periodicals and primary sources of the period. Wider literature from the history of retailing, manufacturing and Victorian studies supports it.

The study concludes that three key periods, the early 1850s, the 1870s and the 1890s, were when substantive changes to photographic technology each released a latent demand for photography initially from the commercial portrait photographer and then, respectively, from the amateur and the snapshotter. This was met and enhanced by new manufacturing, retailing and marketing methods within photography underpinned by wider economic, social and economic changes.

# Contents

Contents .....	3
Figures, Tables and Illustrations .....	6
Figures .....	6
Tables .....	7
Illustrations .....	8
Acknowledgments .....	14
Chapter 1. Introduction .....	16
Setting the scene .....	16
Research approach .....	19
Definitions and scope .....	23
Sources .....	25
Photographic publications .....	25
Archival sources .....	27
Thesis structure .....	29
Summary .....	30
Chapter 2. Literature review .....	31
The literature of photography .....	32
Histories of photography .....	33
Jenkins, McCauley and Edwards .....	37
Products, firms and individuals .....	39
Contemporary literature .....	41
Contextual literature .....	42
Summary .....	46
Chapter 3. The early period .....	48
Science and industry before photography .....	48
Scientific instrument making .....	50
Photography's experimental phase .....	54
Competing processes .....	54
Philosophical instrument makers, opticians and chemists .....	59
Chemicals for photography .....	68
The supply of silver nitrate .....	72
Coalescence into a new industry .....	76
The early market for photography .....	76
The corporate structure: sole trader and partnerships .....	79
Camera manufacturing .....	82
The Ottewill group of camera manufacturers .....	85
Sensitised materials and collodion .....	88
The market and retailing photographic goods .....	94
Amateur versus professional .....	95
Government photography .....	99
Early retailing and marketing .....	100
Advertising photographic goods .....	102
The early trade list .....	104

Exhibitions.....	108
Medals and endorsements.....	110
Summary .....	113
<b>Chapter 4. The decades of expansion.....</b>	<b>115</b>
Technical developments.....	115
Background.....	115
Dry plates.....	115
Mechanised coating of plates.....	120
Prices .....	123
Quality .....	125
New chemistry.....	126
The impact of dry plates on equipment .....	126
The hand camera .....	127
The box form detective camera .....	129
The Kodak camera.....	130
The Pocket Kodak and the Brownie .....	133
Variant hand camera designs .....	135
The wider impact of the hand camera.....	137
Celluloid film .....	138
Origins .....	139
Roll films and roll holders .....	141
The effect of celluloid on the snapshot market.....	144
Mechanisation in equipment manufacturing .....	145
W. Watson and Sons.....	145
J. Lancaster and Son .....	147
Thornton-Pickard Manufacturing Company.....	149
The role of labour in manufacturing .....	150
Trade associations.....	152
Standardising manufacture .....	158
Photographic equipment .....	160
Photographic optics .....	163
Photographic emulsions: The Paget prize.....	166
Patents and photographic innovation.....	172
Background.....	172
The photographic press and patents.....	174
Photographic patent activity .....	175
Patent exploitation .....	177
Licensing and purchasing patent rights .....	178
Patent protection and legal actions .....	184
The patent as a marketing tool.....	189
Trade Marks.....	190
The impact of a patent .....	192
The changing economic condition.....	194
Changes in corporate structure: the limited company.....	195
<b>Chapter 5. Consolidation of an industry .....</b>	<b>202</b>
The arrival of Kodak in Britain .....	202
Monopoly, merger and Ilford Ltd.....	207
Industrial consolidation .....	210
Sensitised goods .....	210
Photographic equipment companies .....	212
Foreign imports and foreign firms.....	213
Early foreign trade.....	213
Imports.....	215



Exports.....	218
The 'Americanisation' of manufacturing .....	223
The growth of sensitised goods manufacturers 1890-1914 .....	225
Centres of photographic manufacturing .....	226
Manchester .....	229
Birmingham .....	230
Relative numbers of firms .....	231
Changes in camera making from 1900 to 1914 .....	231
Summary .....	235
Models of business evolution .....	235
<b>Chapter 6. Retailing to a mass-market .....</b>	<b>237</b>
Economic and social changes .....	237
Changing markets .....	243
Photographic retailing .....	244
Inside the photographic shop .....	246
The co-operative model of retailing.....	248
The growth of non-specialist retailers .....	252
The chemist as retailer .....	254
The photographic wholesaler.....	260
Marketing .....	264
New markets and the snapshotter .....	265
The photographic periodical press.....	269
Other publications: books and house magazines .....	273
Publications: the trade catalogue .....	276
External advertising .....	286
Trade and amateur exhibitions.....	288
Representatives.....	289
Testimonials and endorsements.....	289
New communications .....	293
Branding and corporate identity .....	294
Pricing photographic goods.....	297
Kodak and its response to competition.....	300
Price-cutting .....	301
Wholesaling and retailing.....	308
Summary .....	311
<b>Chapter 7. Conclusions .....</b>	<b>314</b>
Introduction .....	314
Chapter summaries .....	314
Answering the introductory questions .....	318
Summary .....	321
<b>Postscript.....</b>	<b>325</b>
<b>Bibliography.....</b>	<b>327</b>
Archival sources .....	327
Primary sources .....	329
Online sources .....	332
Secondary sources .....	333
<b>Illustrations.....</b>	<b>343</b>

# Figures, Tables and Illustrations

## Figures

- Figure 1. The key broad themes of this study, particularly identifying the central place that consumer demand occupies. .... 17
- Figure 2. Summary of the principal legislation, technical changes and manufacturing, and retailing in the key periods identified between 1839 and 1914. .... 21
- Figure 3. The price of silver 1839-1914.  
*Source: kitco.com.* ..... 75
- Figure 4. London photographic studios 1839-1860.  
*Source: Post Office London Directory.* ..... 77
- Figure 5. Shipments of the Kodak No. 1 camera to London June 1888 to January 1890. Sales would have been split between Britain and Europe.  
*Source: Eastman Kodak Company archive, George Eastman House.* ..... 131
- Figure 6. Total Lancaster camera production 1881-1906  
*Source: Lancaster advertisements 1881-1906.* ..... 148
- Figure 7. British photographic patent activity 1839-1900.  
*Source: Patent Office.* ..... 176
- Figure 8. British patents dealing with change-boxes 1839-1900.  
*Source: Patents for Invention: Photography* ..... 193
- Figure 9. Photographic limited liability companies 1864-1914  
*Source: The National Archives, BT31 company files.* ..... 196
- Figure 10. Eastman Company sales in Britain 1885-1890. Notes: 1. fifteen months / 2. thirteen months to December 1890.  
*Source: Kodak company documents.* ..... 204
- Figure 11. Kodak Britain and USA combined net profits 1895-1916.  
*Source: British Journal of Photography, 1917.* ..... 205

Figure 12. Britannia Works Company / Ilford, Ltd, net profits 1892-1914. <i>Sources: The Photogram, British Journal of Photography, Ilford archives</i> .....	209
Figure 13. Photographic Imports into the UK by Country. <i>Source: Annual Statement of Trade of the United Kingdom, HMSO, 1915.</i> .....	216
Figure 14. Exports of Photographic goods from the United Kingdom by selected countries. <i>Source: Annual Statement of Trade of the United Kingdom, HMSO, 1915.</i> .....	220
Figure 15. Photographic imports/exports 1911-1914. <i>Source: Annual Statement of Trade of the United Kingdom, HMSO, 1915</i> .....	221
Figure 16. Estimated United Kingdom photographic imports/exports 1840-1914. <i>Source: Annual Trade Statistics and author's estimates.</i> .....	222
Figure 17. Distribution of photographic manufacturers in Britain in 1911 showing the number of people employed in photographic manufacturing by county. <i>Source: 1911 Census</i> .....	227
Figure 18. Photographic retailers in London 1839-1914. <i>Source: Post Office London directories</i> .....	299
Figure 19. The relative growth and market size for photographic goods 1839-1914. ....	320
Figure 20. Summary of the key factors influencing the demand for photography between its introduction in 1839 and 1914.....	322
Figure 21. The impact of Kodak on the main areas of focus for this study.....	323

**Tables**

Table 1. Companies known to have been active as photographic manufacturers in the period 1839-c1855. <i>Source: Trade directories, advertisements and catalogues.</i> .....	61
--	----

Table 2. Daguerreotype apparatus manufacturers in 1854 showing their background. <i>Source: Post Office London directory 1854</i> .....	79
Table 3. Camera and photographic equipment design registrations 1839-1870. <i>Source: The National Archives, Design Registrations, BT46</i> .....	83
Table 4. Collodions advertised in September 1860. <i>Source: Advertisements, the Photographic Journal, 15 September 1860</i> .....	91
Table 5. Photographic manufacturers exhibiting at the Great Exhibition 1851. <i>Source: extracted from Photographic Exhibitions in Britain, 1839-1865 (www.peib.dmu.ac.uk)</i> .....	109
Table 6. The average price of dry plates 1913-1921. <i>Source: British Journal of Photography, 18 March 1921, p. 160</i> .....	124
Table 7. Sales of Brownie box cameras 1900-1913 against total Kodak camera sales. <i>Source: Kodak production UK figures</i> .....	137
Table 8. Sales of Lancaster's Le Merveilleux camera July-November 1881. <i>Source: Lancaster advertisements 1881</i> .....	147
Table 9. Standard photographic plate sizes.....	159
Table 10. Kodak in Britain and the United States showing name variants and dates.....	203
Table 11. United Kingdom exports to selected overseas countries. <i>Source: photographic press reports of trade statistics</i> .....	219
Table 12. The principal photographic journals highlighting their main markets.....	271
Table 13. Kodak shops and branches to 1914. <i>Source: Compiled from data in Gauntlett, 1978 and the photographic press</i> .....	309

## Illustrations

Illustration 1. Example of the daguerreotype and calotype processes. <i>Left: 'Jabez Hogg and Mr Johnson', Jabez Hogg (1817-1899) making a portrait in Richard Beard's studio, 1843. Right: Haystack, 1842. William Henry Fox Talbot. A calotype print.</i> <i>National Media Museum, Bradford</i> .....	343
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Illustration 2. Examples of a wet collodion negative and positive. <i>Left</i> : Xie Kitchin as Penelope Boothby, 1876, Charles Lutwidge Dodgson, wet collodion negative. <i>Right</i> : Reverend Errington and curates, c.1854, collodion positive on glass also known as an ambrotype. <i>National Media Museum, Bradford</i> .....	344
Illustration 3. Two cameras owned by William Fox Talbot, c.1840. On the left is a calotype camera produced in 1841-1842, with a lens and metal focusing cover; on the right is a camera of c 1836-1840, with a hole and cork for focusing, and a rack for raising the camera. <i>National Media Museum, Bradford</i> .....	345
Illustration 4. 'Photographic apparatus, chemicals, &c...', Edward Palmer, philosophical instrument maker, 1843. <i>Private collection</i> .....	346
Illustration 5. A sliding box form of camera, the Giroux daguerreotype camera, c.1839/40. <i>Westlicht Photographica Auction</i> .....	347
Illustration 6. The typical layout of a Beard daguerreotype studio showing the position of the Wolcott camera (a), taken from Richard Beard, <i>Apparatus for obtaining likenesses, &amp;c.</i> , British patent no. 8546, 13 June 1840. <i>Private collection</i> .....	348
Illustration 7. Advertisement for photographic chemicals from W. Bailey and Son, Wolverhampton in <i>Photographic Notes</i> , 1 August 1864, n.p. <i>Private collection</i> .....	349
Illustration 8. Photographic apparatus, c.1843. The illustration shows the apparatus required for photography: 1. Camera for daguerreotype or calotype use; 2. Plate holder for paper or daguerreotype use; 3. Ground glass viewing screen; 4. Mirror to fix to the lens to correct the reversal of the image; 5. Iodine box; 6. Bromine apparatus; 7. Mercury box; 8. Spirit burner for heating mercury; 9. Plate cleaner; 10. Velvet buff; 11. Plate box for holding polished or prepared daguerreotype plates. <i>Private collection</i> .....	350
Illustration 9. Traditional British cameras. <i>Clockwise from top left</i> : Horne and Thornthwaite collapsible box form camera after Ottewill's design, c. 1854; George Hare New patent field camera, c.1885; Meagher stereoscopic tailboard camera, c.1860; Ottewill collapsible camera, c.1853. <i>The Jim Barron collection</i> .....	351
Illustration 10. R. W. Thomas advertisement for collodion. The advert also includes a testimonial as to its effectiveness from the photographer William Lake Price. From: <i>The Photographic Journal</i> , 15 July 1859, n.p. <i>Private collection</i> .....	352

Illustration 11. The exterior of an early photographic manufacturer and retailer. Murray and Heath's premises at 69 Jermyn Street, London, c.1860. Goods were retailed and probably made here. Albumen print, <i>Private collection</i> .	353
Illustration 12. Examples of photographic premises. <i>Clockwise from top left</i> : The Photographic Artists Co-operative Supply Association, c.1878; the premises of Reeves and Hoare, c.1871; and R. W. Thomas, Pall Mall, London, 1880, <i>Source: from various photographic journals</i> .	354
Illustration 13. W. W. Rouch & Co., London, retail and wholesale premises. Advertisement, <i>The Year-Book of Photography and Photographic News Almanac 1878</i>	355
Illustration 14. A typical page of advertising from the <i>Liverpool and Manchester Photographic Journal</i> , 1 August 1858, p. 198. <i>Private collection</i> .	356
Illustration 15. Advertisement for T. Ottewill & Co., London from the <i>Liverpool and Manchester Photographic Journal</i> , 15 June 1858, p. 160. Ottewill and a limited number of other advertisers used simple line drawings in their advertisements. <i>Private collection</i> .	357
Illustration 16. <i>Price List of Photographic Materials &amp; Apparatus</i> , London: Alexis Gaudin & Brothers, c.1854. The catalogue is typical of many with a simple categorised list of goods available and un-illustrated. <i>Private collection</i> .	358
Illustration 17. Advertisement by T. Cadby Ponting for his collodion which makes extensive use of the medal awarded to him at the 1862 International Exhibition, <i>The Year-Book of Photography and Photographic News Almanac 1865</i> , London: Thomas Piper, 1865, p. xxv. <i>Private collection</i> .	359
Illustration 18. Liverpool Dry Plate and Photographic Printing Company advertisement from 1878 showing dry plates. <i>The Year-Book of Photography and Photographic News Almanac 1878</i> , London: Piper and Carter, 1878. <i>Private collection</i>	360
Illustration 19. Marion and Company's mechanised plate coating from the <i>Scientific American supplement</i> , 26 May 1888, p. 10337. <i>Private collection</i> .	361
Illustration 20. Thomas Bolas's detective camera as reproduced in the <i>Photographic Journal</i> , 21 January 1881, p. 60. <i>Private collection</i> .	362

Illustration 21. The original Kodak camera of 1888 with an unopened carton of celluloid film from c.1889. <i>Kodak Museum collection.</i> .....	363
Illustration 22. The two important Kodak amateur cameras. <i>Left:</i> The Pocket Kodak camera from <i>Kodak and General Price List, 1897</i> ; <i>Right:</i> The no. 1 Brownie Kodak camera from <i>The Brownie Kodak Family, c.1903.</i> <i>Private collection.</i> .....	364
Illustration 23. Examples of forms of amateur cameras other than the hand camera. <i>Top left:</i> A Shew Eclipse camera. <i>Top right:</i> A Houghtons Ltd Sanderson hand and stand camera. <i>Bottom left:</i> A Houghtons Ltd Ticka watch camera. <i>Bottom right:</i> Ensignette camera. <i>Jim Barron collection and Private collection.</i> .....	365
Illustration 24. The Eastman-Walker roll film holder. <i>The Photographic News, 23 December 1887, p. 802.</i> .....	366
Illustration 25. J. Rogerson's photographic manufactory from an 1870 advertisement showing the mechanisation incorporated into the premises. <i>Private collection.</i> .....	367
Illustration 26. J. Lancaster's Le Merveilleux plate camera c.1887. The camera was introduced in 1882 and remained in production in different forms until at least 1907. <i>Private collection.</i> .....	368
Illustration 27. The Thornton-Pickard factories. The top two views probably show the firm's first works in Manchester and those below the later Altrincham factory which adopted methods of mass-production over the limited mechanisation of the first works. <i>Courtesy Douglas Rendell.</i> .....	369
Illustration 28. Paget Prize Plate Company advertisement from the <i>British Journal Photographic Almanac 1889.</i> <i>Private collection.</i> .....	370
Illustration 29. Hurter and Driffield Actinograph. <i>Jim Barron Collection.</i> .....	371
Illustration 30. The Eastman company headquarters at 115-117 Oxford Street, c.1897. <i>Kodak Museum collection.</i> .....	372
Illustration 31. The Eastman Photographic Materials Company headquarters building. <i>Top:</i> 43 Clerkenwell Road, London, c.1897; <i>Bottom:</i> the enlarged Clerkenwell Road premises and after renumbering in 1904, emblazoned with 'Kodak'. <i>Kodak Museum collection.</i> .....	373

Illustration 32. The Eastman Photographic Materials Company factory at Harrow, c. 1897 after an extension was added on the left hand-side. The original buildings with company name along their centre were erected in 1891. <i>Kodak Museum collection.</i> .....	374
Illustration 33. Houghtons' Ensign factory in Walthamstow as illustrated in its 1910 catalogue. <i>Private collection.</i> .....	375
Illustration 34. The Kodak works at Harrow. <i>Left:</i> Printing galleries, c.1900; <i>Top, right:</i> the print washing room, undated; <i>Bottom, right:</i> negative retouching room. <i>Kodak Museum collection.</i> .....	376
Illustration 35. A selection of different types of high-quality cameras produced in small quantities, clockwise from top left: Newman and Guardia New Special Sibyl, Dallmeyer hand and stand camera; a Newman-Sinclair reflex camera; a Newman and Guardia hand and stand camera. <i>Jim Barron collection.</i> .....	377
Illustration 36. A typical chemist shop selling photographic goods, High Street, Peckham, London, c.1880, albumen print. <i>Private collection.</i> .....	378
Illustration 38. The exterior of Kodak's 59 Brompton Road, London, retail branch which opened in 1900 showing the large open glass window and stepped display of cameras, apparatus and prints. A marked contrast to the premises in illustration 37. <i>Kodak Museum collection.</i> .....	379
Illustration 39. The department store Benetfink & Co.'s Catalogue of Photographic Apparatus, Lanterns, &c., c.1906. <i>Private collection.</i> .....	381
Illustration 40. Books Cash Chemist. Price list of photographic department, c.1905. <i>Private collection.</i> .....	382
Illustration 41. W. Butcher and Sons London headquarters, Camera House, from its 1914 price list. <i>Private collection.</i> .....	383
Illustration 42. The use of women in photographic advertising began in a more targeted way from the 1890s. This Adams & Co. catalogue dates from c.1910. <i>Private collection.</i> .....	384
Illustration 43. A Kodak catalogue from c.1917 featuring the Kodak girl. <i>Private collection.</i> .....	385



Illustration 44. Two of the new photographic journals which appeared from the 1880s. *Left: The Amateur Photographer*, 20 January 1888. *Right: The Photographic Dealer*, September 1901. These were aimed at the amateur and trade markets respectively.  
*Private collection.* .....386

Illustration 45. Three Houghtons catalogues: 1904-5; 1908, 1912 and 1914 showing their enormous size.  
*Private collection.* .....387

Illustration 46. Three Houghtons, London, photographic catalogues 1906-1908 and issued in Jersey, Channel Islands, two over printed with the local retailer's name, the third with a label fixed in space left for the purpose.  
*Private collection.* .....388

Illustration 47. Two W. Butcher and Sons posters c.1910. *Private collection.* .....389

Illustration 48. The Pocket Kodak Gallery in the Kodak Exhibition at the New Gallery, Regent Street, London, November 1897. The room was designed by George Walton and was filled with amateur photographs sent in response to a Kodak competition.  
*Kodak Museum collection.* .....390

Illustration 49. A George Walton designed cover of Kodak's 1904 *Price List*.  
*Private collection.* .....391

Illustration 50. A selection of photographic manufactures' company logos and trade marks which began to be introduced from the 1880s. *From various photographic periodicals.* .....392

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## Chapter 1. Introduction

***'Photography may fairly be said to have broken upon the world without an introduction' (1853)***<sup>1</sup>

### Setting the scene

This thesis presents a new history of British photography. Between its origin in 1839 as a scientific curiosity to 1914 it changed fundamentally. By 1914, photography was retailed on every high street and it existed as a vibrant manufacturing industry and as a commercial and leisure pursuit for tens of thousands of people throughout Britain. Even part way through this period changes were apparent. James Wood writing in 1871 observed that photography 'has created business for a very large number of mercantile firms who provide various requirements; and also for manufacturers such as opticians, chemists, dealers in the precious metals, paper-makers, cabinet-makers, gilders, glazers, &c., &c.'<sup>2</sup> One estimate in 1871 suggested over 50,000 people made their living by photography in that year.<sup>3</sup> The firms that were making and retailing Wood's 'various requirements' are part of the focus of this thesis.

Wood was articulating a change which had begun in the early-1850s with the development of a specialised manufacturing and retailing sector for a market of largely commercial portrait photographers. Sixty years later, by the outbreak of war in 1914, the

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<sup>1</sup> 'Photographic instruments', *Journal of the Society of Arts*, vol. 1, 15 April 1853, pp. 245-246.

<sup>2</sup> James Wood, 'The commercial aspects of photography', *British Journal of Photography*, no. 563 vol. 18, 17 February 1871, pp. 74-76.

<sup>3</sup> Erich Stenger, *The march of photography*, London: Focal Press, 1958, p. 226. Stenger provides no source for this statistic.

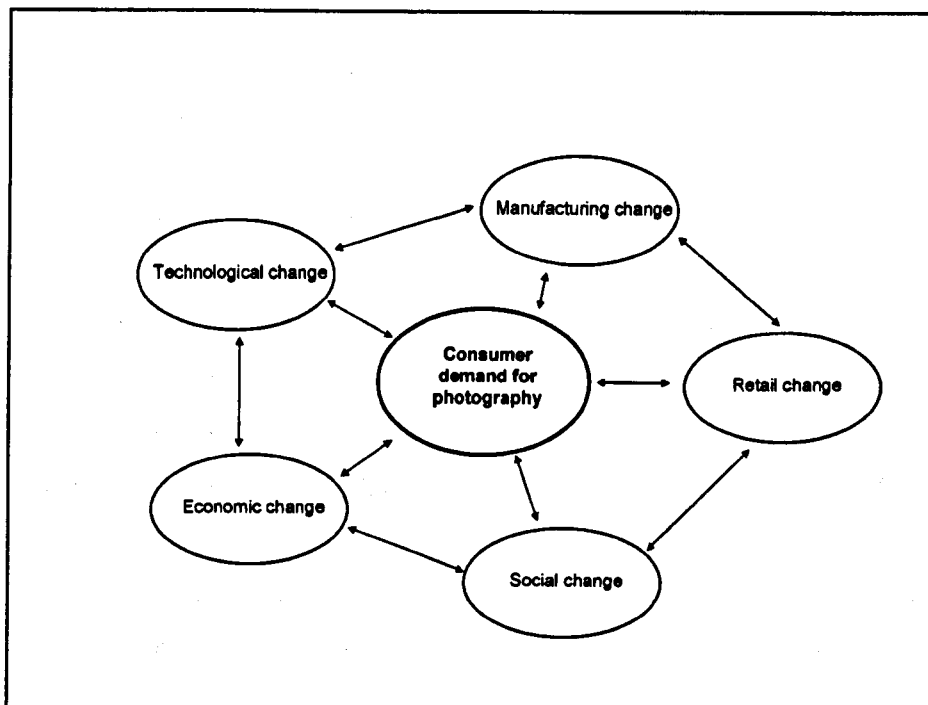


Figure 1. The key broad themes of this study, particularly identifying the central place that consumer demand occupies.

business of manufacturing and retailing photography had transformed itself again. It then concentrated on providing a large amateur market with photographic equipment, sensitised materials and servicing the snapshotter. The commercial market for photography had become secondary to the amateur. The industry in Britain had grown dramatically in size from the early 1840s when no more than a few tens of people were directly employed in it to one that by 1911 employed several thousand men and women.<sup>4</sup> In the space of seventy-five years, having ‘broken upon the world’, the business of photography was almost unrecognisable from its origins.

How this growth in photographic manufacturing and retailing came about is a complex story that incorporates technological, manufacturing and retailing change. Underpinning these were changing economic conditions and new social mores, which from the 1880s

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<sup>4</sup> The 1911 census recorded 1211 men and women working in photographic apparatus making and 1468 in associated areas. Retail workers for photography are not recorded separately. These numbers are likely to be a considerable under-estimate of the actual numbers involved.

nurtured and supported a dramatically expanding consumer demand for photography as a leisure pursuit and as simply a means of recording people and places.

Each of these key factors underwent important changes during 1839 to 1914.

Photography developed technically as changes in chemistry improved the process of making of a photograph and made results more certain. This, coupled with better optics, allowed the camera to become smaller. Standardisation and improved manufacturing techniques ensured that the production of sensitised goods became more consistent and, again, helped results become predictable, particularly for the amateur. The manufacturing of photographic equipment and sensitised goods moved from artisans to mechanised engineering processes, which reduced the cost of photography for the consumer. Changes in retailing made photographic equipment, plates and films readily available and new outlets supported the amateur photographer with services for developing and printing photographs. More widely, powerful social and economic changes in Britain such as greater leisure time and increasing amounts of disposable income drove the mass-consumption of photography as a pastime and a means of easily recording people and events. Figure 1 shows this in a simplified form.

The relationship between consumer demand for photography and these factors is at the centre of this thesis. This study attempts to assess and quantify the size of the industry up to 1914. It examines the relative size of the professional and amateur markets for photography; and it describes the effect of consumer demand on the industry. The complex links that existed between the industry and the demand for products and materials is also examined. How important, for example, was the move from glass plates to roll film for the amateur? What was the role of technological change? How relevant was the decrease in the physical size of the camera? Was the separation of picture taking from the processing and printing of the photograph a significant step in supporting a mass market? What was the relative importance of the professional, amateur and snapshotter markets for photographic goods and how did these change over time? What was the relative cost of photography and how affordable was it? How did the expansion of photographic retailing impact the consumer? Subsequent chapters will

explore these questions. Underpinning all these is the argument that technological change arrived just when there was a nascent demand from consumers for photography. Businesses were able to support and expand to meet this with new techniques of mass-production and of retailing.

While much has been written about the aesthetics of the photograph, the photographic industry has been a neglected aspect of the history of photography. I would argue that a complete understanding of the photographic image cannot be achieved without knowing what role photographic manufacturing, retailing and the consumer played in its production. The limited data used previously such as the production of cartes-de-visite has become familiar by repetition and there have been few attempts to develop this further. The only detailed history of a national photographic industry was published in 1975 and covered the United States from 1839 to 1925.<sup>5</sup> Written by Reese Jenkins, it was ground-breaking at the time but it tended to be read more by economic historians than photographic historians. It showed that changes to photographic manufacturing and business practices were crucial to the popularisation of photography within an American context. Only within the very recent past have a small number of academics begun to look at the economics of photography with the business of the photographic portrait studio their focus. These are not the national surveys that Jenkins pioneered but they represent, at least, a first step to reappraising an essential and hitherto missing component of photography's history. This study attempts to redress that imbalance.

### **Research approach**

This thesis does not adopt the traditional approaches to photographic history such as discussing individual photographers, stylistic movements, or general themes where there is little new to add beyond subjective reinterpretation. A reading of the

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<sup>5</sup> Reese V. Jenkins, *Images and Enterprise. Technology and the American Photographic Industry 1839 to 1925*, Baltimore: The John Hopkins University Press, 1975.

photographic image is also not part of this work, although there is more work required on the amateur snapshot in the context of its production which this study will support. Instead, it looks at the manufacturing of photographic goods and how they were retailed, who bought them and how changing demand from consumers influenced their manufacture, distribution and use. What it does is consider, for the first time, is the photographic industry and the role of consumers and consumption in the history of British photography.<sup>6</sup>

A new history of British photography is a bold claim. However, an understanding of how photographic equipment and sensitised materials were manufactured and made available to photographers and the public is central to understanding photography's impact on society. As the following chapter shows, there are no comparable works covering this and few texts that overlap with this study. The closest is Jenkins's multi-disciplinary study of the American photographic industry, which had a business and economic history approach overlain with perspectives on the history of science and technology. This study adopts a different approach. It takes the role of the consumer as the key influence on the development and growth of the photographic industry and relates it to changes in photographic technology, manufacturing and the wider social and economic changes that occurred through the period.

At a broad level, the growth of popular photography from the early 1880s and the substantial impact it had on the industry, especially regarding retailing, divides the period into two: pre-1880s and post-1880s. Further separating these, as shown in Figure 2, helps emphasise the key position the 1870s-1890s occupy where there were complex dynamics working between consumer demand, technological changes within photography, changes to the manufacturing method, retailing and marketing, and wider social and economic changes. There is no precise turning point; some changes happened earlier than others and most were operating concurrently. Other historians of photography have alluded to this but none attempted to quantify them or look in detail

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<sup>6</sup> For a wider discussion see: Neil McKendrick, John Brewer and J. H. Plumb, *The birth of a consumer society: the commercialisation of eighteenth-century England*, London: Europa, 1982.



	<b>Early Period 1839-1870s</b>	<b>Middle Period 1870s-1890s</b>	<b>Late Period 1890s-1914</b>
<b>Law and Society</b>	Patent Act	Patent Act Trade Mark Registration Act Education Act Public Libraries Act Bank Holiday Act	Boer War Economic downturn First World War
<b>Photography</b>	Daguerreotype Calotype Wet-collodion plates	Dry plates Cut film Hand camera	Dry plates Cut film Roll film
<b>Manufacturing and retailing</b>	Small manufacturers/retailers Mainly professional market Move to specialist manufacturers and retailers	Small manufacturers/retailers; a move to larger units of production Move to a dominant amateur and snapshot market Specialist manufacturers and retailers Growth of sensitised goods manufacturers New techniques of marketing	Consolidation of manufacturers; mass-production dominant Growth of non-specialist retailers Demand from snapshotters Increasing foreign competition

Figure 2. Summary of the principal legislation, technical changes and manufacturing, and retailing in the key periods identified between 1839 and 1914.

at relative cause and effect. No writer has proposed how much consumer demand responded to, or how much it supported, these changes.<sup>7</sup> While it may not be possible to identify one of these as being the most important factor in driving consumer demand the following chapters will show the changes that occurred in this and that their impact and response to consumer demand was significant.

The presentation of facts based upon primary sources as exemplified by von Ranke's methodology for historical research has been adopted here.<sup>8</sup> In this study which has no

<sup>7</sup> As an example see: David Allison, 'Photography and the mass market' and Brian Coe, 'The rollfilm revolution' both in Colin Ford (ed.), *The story of popular photography*, London: Century Hutchinson, 1989. These authors provide accounts of popular photography and how it was taken up by the public, a technical history of the camera and the Kodak, and its impact on the amateur photographer.

<sup>8</sup> Leopold von Ranke established his school of thought between 1824 and 1871. He argued that historians should disregard sources such as personal memoirs and texts written after the event they focus on, and base their findings solely on contemporary narrative accounts, or primary sources. See: Michael Bentley, *Modern Historiography: An Introduction*, London: Routledge, 1999.

precedent from within photographic history and breaks new ground the narrative approach utilising primary source material was determined to be the most appropriate; especially where secondary sources are limited and mostly superficial. Furthermore, the limited applicability of any appropriate wider theoretical framework from other disciplines suggests that a Rankian approach to the subject, laying out a strong empirical grounding, is a necessary first step for other researchers to build upon.

The story presented here is too complex and inter-related to present it clearly in a thematic way. Consequently, the approach taken is largely chronological. Many of the main themes are at their strongest in particular periods, which facilitates this approach. As examples, the new methods of manufacturing and marketing were introduced largely after 1880 and innovations in retailing and marketing commenced from the 1890s. Generally, the photographic industry established itself as a distinct entity between 1839 and the 1870s. Between the mid-1870s and the 1890s there was significant technological change in sensitised goods and the growth of mass-consumer demand. The later 1890s contained the consolidation of that demand and the achievement of an industrial structure in a form that would remain largely unchanged until 1914.

Aspects of economic and business history, marketing and retailing history, technological change and industrialisation are all incorporated into this study. Although the overarching focus is on photography, a limited number of theoretical models from other disciplines have been used to explain specific situations. This interdisciplinary approach has been adopted to reflect the mix of factors that are peculiar to the photographic industry. If there is a wider framework into which this study fits it is an empirical one with evidence gathered from disparate sources being used to support the key themes. In keeping with this, a deliberate attempt has been made to use evidence directly from the journals of the period in the form of relevant extracts. The comments of the contemporary writer reflect their immediate concerns which the modern-day historian is best placed to set within a wider context or to interpret. This approach, supported by fully referenced material, is the first step to writing this new history and will allow others to further investigate the themes discussed here.

## Definitions and scope

In order to keep this study to a manageable size a precise scope and definition of terms have been established. Geographically the study is confined to Great Britain and Ireland, with the focus primarily on England, which had by far the greatest numbers of photographic manufacturers and retailers.<sup>9</sup> These were concentrated in London, although the industrial cities of Birmingham, Manchester, Liverpool and Leeds, also had firms of note. In Scotland, although there were several significant manufacturers and retailers in Glasgow, there were far fewer in number than in English cities and reference to them has been made only where they illustrate particular points. Ireland had no photographic manufacturing industry of any note during the period concerning this study and had a very limited number of photographic retailers until the mid-1880s.<sup>10</sup>

For the purpose of this study the 'photographic manufacturing industry' has been defined precisely. The industry is considered to consist of manufacturers of photographic equipment and sensitised materials used up to the point of producing a positive photographic image on paper, glass or metal. This includes the camera, photographic accessories such as tripods, processing and dark room equipment, but excludes mounts, frames, albums, and other presentation materials which were widely manufactured by stationers and other trades. For sensitised materials this includes firms making materials producing negatives and positives on paper, glass or metal as determined by the relevant process. Part of this study examines the raw materials used in photographic manufacturing such as glass and chemicals. These, together with allied

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<sup>9</sup> J. M. Hawkins and R. Allen, *The Oxford encyclopedic English dictionary*, Oxford: Clarendon Press, 1991, p. 183. Britain is a contraction of Great Britain and comprised England, Wales and Scotland.

<sup>10</sup> A. D. Morrison-Low, 'The trade in scientific instruments in Dublin, 1830-1921' in J. E. Burnett and A. D. Morrison-Low, *'Vulgar and mechanick' The scientific instrument trade in Ireland 1650-1921*, Edinburgh: National Museums of Scotland, 1989, pp. 39-69. Although there were a number of retailers of photographic goods in Dublin from the mid-1850s such as James A. Cumine, a philosophical instrument maker and photographic artist operating an optical and photographic warehouse from 1860-61 to the early 1880s, there is no indication that any formal manufacturing was taking place. The few cameras with Dublin name plates were almost certainly made in England and simply labelled with the local retailer's name. The only firm of note was the Grubb optical firm, which had its principal business making telescope optics, although it also made photographic lenses in Ireland. Thomas and Howard Grubb were actively involved in Ireland's two leading photographic societies.

areas such as photographic chemical manufacturers, are considered within the scope because they are essential components of photographic equipment and production of materials.

The period of this study, 1839 to 1914, starts with the announcement of photography when other trades began supplying the emerging medium before the development of a photographic industry. It continues with the inception of an industry supplying photographic equipment and materials through to the development of specialist photographic manufacturers and retailers. 1914 is an appropriate stopping point as by then the industry and retailing of photography were fully established as distinct entities in their own right. The First World War marked a major interruption to the British amateur photographic trade, particularly manufacturers, and from late 1914 the British government required many manufacturers to fulfil government orders for the production of optical and other munitions.<sup>11</sup> The largest firms including the opticians Ross Limited and camera makers A. Kershaw and Sons and Houghtons Limited turned over much of their manufacturing to government work.<sup>12</sup>

The signing of the armistice in 1918 allowed the photographic industry to return to civilian production but the post war period was one of a new economic order. A return to the pre-1914 position was no longer tenable as an economic downturn in the early 1920s encouraged a number of major companies to merge and others failed as they attempted to respond to increased foreign competition. In this study reference is made to post-1914 activities only where they help to make a point or where relevant evidence is only available from this period.

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<sup>11</sup> In a private communication Colin Harding notes that the American Eastman Kodak Company continued to manufacture the Vest Pocket Kodak and imports to Britain rose from 5,500 in 1914 to 31,500 in 1916. He suggests that these would have used film and photographic paper made in Britain.

<sup>12</sup> See: Stephen Sambrook, *The optical munitions industry in Great Britain 1888 to 1923*, unpublished PhD thesis, Glasgow: Department of Economic and Social History, 2005; and D. E. H. Egerton, 'Industrial research in the British photographic industry, 1879-1939' in Jonathan Leibenau, *The challenges of new technology. Innovations in British business since 1850*, Aldershot: Gower Publishing, 1988, pp. 106-134, for a review of the impact of the 1914-1918 war on the optical munitions and photographic industries.

## Sources

### *Photographic publications*

The primary sources for this study are widely spread but the photographic press is by far the most important and has been much used. It dates from 1853 with commercially oriented photographic periodicals arriving in 1854 and 1858.<sup>13</sup> The *British Journal of Photography* and *Photographic News* were the longest running journals of the period. The former had its origins as the journal of various photographic societies but by the later 1850s was more concerned with the business of photography, principally the photographic studio. Both journals, especially from the 1870s, ran occasional features on photographic manufacturing companies and their activities.<sup>14</sup> The amateur photographic press grew in number from the mid-1880s and a more specialised trade-orientated press started to develop from the mid-1890s. Careful reading of the first two primary sources and more selective readings of other publications has elicited important quantitative and qualitative data.

Prior to 1853 sources such as the *Times* newspaper, the *Art Journal*, the *Athenaeum*, the *Literary Gazette* and *Notes and Queries*, as well as specialist journals dealing with chemistry and general science, reported on photography and so they have been reviewed. They deal exclusively with the photographic image, the photographic studio and with technical developments in the medium. There was no editorial coverage of the business of photography but some carried advertisements for photographic equipment and materials and portrait studios. By the mid-1850s the novelty associated with the

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<sup>13</sup> The *Journal of the Photographic Society* was first published in March 1853 and concentrated on society matters and developments in photographic processes. The *British Journal of Photography* was launched in January 1854 as *The Liverpool Photographic Journal* and took the new title in 1860. It focused more on the photographic trade, initially on matters affecting the studio photographer, before broadening its coverage from the later 1870s. The *Photographic News* was launched in September 1858 and had an emphasis on the on the photographic studio, alongside general photographic issues, until adding wider commercial matters from the 1890s.

<sup>14</sup> Helmut Gernsheim, *Incunabula of British photographic literature 1839-1875*, London: Scolar Press, 1984, pp. 131-133, gives a useful summary of the principal photographic journals during the early part of the period of this study. Walter Koelzer, *Photographic and cinematographic periodicals 1840-1940*, Düsseldorf: Der Foto Brell, 1992, provides a detailed listing of journals for the whole period.

new art-science of photography and wider public interest in it had dissipated. This, combined with the introduction of the specialist photographic press, ensured that general reports on photography, except those reviewing exhibitions, disappeared from these general periodicals.<sup>15</sup>

Trade catalogues and literature, where relevant, have also been reviewed. Those from general philosophical instrument makers, optical or chemical firms provide the first insight into photography for the period up to the mid-1850s. But the number of catalogues available for the pre-1880 period from these and from photographic firms is very limited and only a few firms issued them regularly. Some, such as Horne and Thornthwaite's *A guide to photography*, were periodically updated and this went through at least fourteen editions between 1845 and 1857 but it was an exception.<sup>16</sup> Compared to the post-1880s the period between the 1860s and early 1880s is notable for a dearth of trade catalogues with fewer surviving in these years than for the 1840s and 1850s. There seems no particular reason for this as catalogues were certainly being produced, as attested by statements in the advertising columns of the photographic press. From the mid-1880s increasing numbers were published by different firms and in ever-larger editions and many of these survive. Where they could be located they have been consulted. By the end of the period in 1914 the variety of catalogues had narrowed as many retailers simply over-printed their name on a catalogue prepared by Butcher, Houghtons or Kodak.<sup>17</sup> The role of the photographic press and the photographic trade

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<sup>15</sup> Helmut Gernsheim, *Incunabula of British photographic literature 1839-1875*, London: Scolar Press, 1984, pp. 135-136, summarises the main non-photographic periodicals dealing with photography before the 1850s.

<sup>16</sup> Helmut Gernsheim, *Incunabula of British photographic literature 1839-1875*, London: Scolar Press, 1984, p. 91 (no. 676) and p. 108 (no. 794). The catalogue was also issued separately to the manual.

<sup>17</sup> Michael Pritchard, 'The photographic trade catalogue in Britain 1839-1916', *The Ephemerist*, no. 145, Summer 2009, pp. 3-11. There are few collections of trade catalogues that include those from photographic firms. The most important holdings are at the National Media Museum, Bradford; the Science Museum library, Swindon; the British Library, London; the Smithsonian Institution, Washington, DC. There are small holdings in museums, usually relating to local manufacturers in, for example, Edinburgh, Manchester, Leeds, Birmingham and Newcastle. A number of private collections hold significant numbers of catalogues.

catalogue and their influence in marketing photography are discussed in Chapters 3 and 6.

#### *Archival sources*

There are only a very small number of photographic company archives surviving, two of which are directly relevant to this study.<sup>18</sup> The Ilford Limited archive includes material relating to the Ilford company and to a number of the companies that it took over. Of these the material dealing with Wellington and Ward is the most significant. The Ilford archive includes only a small amount of material relating to the pre-1914 period. The other is that of Kodak Limited which was transferred to the British Library in March 2009. This has yet to be made available but some of its content is duplicated in the archive of its parent company, the Eastman Kodak Company, and relevant material there has been examined. A smaller archive in Birmingham holds the papers of Richard Hill Norris. This covers some of his photographic activities, although these tend to deal with formulae and experimental notes rather than material more useful for this study such as sales of his dry plates, and it is most useful when discussing his activities from the 1890s.<sup>19</sup> There are other caches of material held locally and in private collections, which have also been used. Of these the most useful relate to the firms of Dallmeyer, Houghton and Thornton-Pickard.<sup>20</sup>

Aside from these archival sources there is a small amount of extant material compiled

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<sup>18</sup> An extensive search of business records was undertaken using Francis Goodall, *A bibliography of British business histories*, Aldershot: Gower, 1987, the Business Archives Council and other sources.

<sup>19</sup> The Ilford archive is currently housed at the National Media Museum (NMeM), Bradford, and consists mainly of financial records. The Hill Norris material is housed in the Special Collections department at the University of Birmingham and includes experimental notebooks and correspondence with very little material of direct business interest. The Kodak Limited archive was transferred to the British Library from the company in March 2009. Copies of some material relating to production figures housed within it are held at the NMeM.

<sup>20</sup> The National Archives, Kew, houses the Board of Trade company files mainly under class BT31. Although some files are missing and most have been heavily weeded they provide an important source for a number of photographic companies. Local collections include material in London relating to Dallmeyer and Houghtons, in Stockport relating to Thornton-Pickard, the Wellcome Library relating to various chemical manufacturers and material in Manchester and Birmingham, relating to local firms.

by government departments. The most important of these are the records of the company registrar as part of the Board of Trade held at the National Archives. These relate to the formation and dissolution of limited companies with a file held on each company. They have been heavily weeded over the years and now generally contain only official documents detailing the formation of the company, sample lists of shareholders, and details of the company liquidation. Files from these that relate to photographic companies up to 1914 have been reviewed. Government publications such as the 1907 Census of Production and the decennial census between 1841 and 1911 occasionally provided small windows into the photographic industry. The 1911 census was particularly detailed and provides a useful snapshot of photographic manufacturing and retailing to support other sources. But for the most part the photographic industry was too small to be enumerated separately and official government statistics tended to combine photographic manufacturing into larger categories, such as scientific instrument making.

Parliamentary publications such as *Hansard* make very infrequent references to the photographic industry and concentrate on legislative issues such as copyright or the use of photography by government departments. The *London Gazette* - the official newspaper of record for the United Kingdom - contains extensive references to the formation and dissolution of commercial partnerships and to bankruptcies so it has been useful in gaining an insight into the activity of firms for the pre-1880 period.<sup>21</sup> Although there were privately published surveys of trades of which Charles Booth's *Life and Labour of the People in London* is the best known these provide little detail although they add some general context around manufacturing and retailing. An extensive trawl of other archival sources has located little other relevant material. Secondary sources are limited in their coverage and are considered as part of the literature review in Chapter 2.

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<sup>21</sup> A database of firms and individuals working within the photography industry and studios has been compiled. The *London Gazette* is available online at: <http://www.london-gazette.co.uk/>



## **Thesis structure**

Manufacturing and retailing are usually very distinct aspects of the photographic industry where there is little overlap. Only in the early period, where manufacturers were often retailing their own goods, do the two come together and this has helped determined the chapter division within an overall chronological approach.

Chapter 1 introduces the general subject, sets out the scope of the thesis and poses some of the questions that will be answered in subsequent chapters. Chapter 2 provides a review of secondary sources from within the photographic discourse and from other relevant areas such as retailing history which help contextualise photographic manufacturing and retailing. Chapter 3 examines the early period between 1839 and the 1870s from both a manufacturing and retailing perspective. The period of rapid change in manufacturing between the 1870s and 1890s is dealt with in Chapter 4, while Chapter 5 examines the rise of the mass market through the major changes in photographic retailing and marketing that occurred from the 1880s to 1914. The consolidation of the industry from the 1890s up to 1914 is the subject of Chapter 6. Within each chapter key themes are identified and discussed. For a small number of topics such as the role of the trade catalogue, which changed significantly between the early and later periods, separate aspects of them are dealt with in the appropriate chapter rather combining them and breaking the overall chronology.

Chapter 7 provides a conclusion by referring back to and answering the questions posed in the introduction. It provides a summary of the key points identified within the thesis and defines the changing size of the market for photography in Britain up to 1914. It completes this by assessing the role and impact that the consumer played on the photographic industry's manufacturing and retailing sectors.

A postscript suggesting avenues for further research and the bibliography complete this thesis.

## Summary

The absence of any previous detailed work relating to photographic manufacturing in Britain presents both an opportunity and a challenge. To find such an important yet unexplored aspect of British photography that opens up a new history of the subject is unusual. The challenge is that sources of data are limited and those that are available are time-consuming to explore. To keep this study to a manageable level a clearly defined scope has been established by setting clear geographic, subject and temporal boundaries. A chronological approach has been adopted within the over-riding themes of photographic manufacturing, photographic retailing and the relationship of the photographic industry to the consumer.

The recent recognition by academics such as Anne McCauley, Steve Edwards and Geoffrey Batchen that the business of the photographic portrait studio is necessary for a better understanding of the cultural history of the photograph suggests that a detailed examination of the wider photographic industry is increasingly overdue.<sup>22</sup> There is a significant amount of primary source material within the two principal journals of the period - the *British Journal of Photography* and *Photographic News* - that has not been examined and contextualised previously. The use and interpretation of this data will provide a new insight into how and why particular types photographs were produced by professional and amateur photographers. It also sets a framework for future research.

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<sup>22</sup> McCauley's and Edwards's books are discussed in Chapter 2. Geoffrey Batchen is exploring commercial aspects of the photographic studio, but not the wider industry *per se*, for an exhibition taking place in Autumn 2011 and publication. He is examining the London studios of Richard Beard and Antoine Claudet of the 1840s and 1850s and this was the subject of a paper he gave at the Photographers' Gallery, London, on 14 April 2009.

## Chapter 2. Literature review

***'The B. J. P. has always been in the van of photographic progress. Fortunate is the man who possesses a complete set'*<sup>1</sup>**

Photographic discourse has paid little attention to the role of photographic manufacturing and retailing other than through short statements, or the repetition of established facts and widely-held assumptions. These have been made within the context of broader histories of photography or individual biographies and have rarely been supported by appropriate evidence. There are a number of reasons why the businesses of photography, manufacturing and retailing, as well as the economics of photography, have been overlooked. As a new discipline, historians of photography focused initially on broad histories of the medium, aesthetic considerations, and the roles of particular photographers. With a gathering maturity in the late 1970s and 1980s a more thematic approach to the subject was adopted alongside work attempting to establish a theoretical basis. This was largely led by art historians with a focus that overlooked more deterministic areas of research. More recent academic work in photographic history has tended to come from other disciplines in the humanities and social sciences, and has seen the imposition of theoretical constructs from these on to photographic history. Within these the manufacturing aspects of photography and its retailing were considered of little importance around wider debates concerning the role and nature of the photograph.

The more recent wider interest in leisure and mass-consumerism has similarly either

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<sup>1</sup> W. Jerome Harrison, 'The literature of photography', *Photographic News*, no. 1540 vol. 32, 9 March 1888, p. 154. Harrison's extensive bibliography of photography appeared between 1886 and 1888. It presents a useful survey of photographic literature and the wider literature dealing with photography occasionally accompanied by a commentary regarding its usefulness.

ignored photography or only tackled it superficially. The impacts of the carte-de-visite photograph or stereoscopy from the 1850s have been the usual entry points. Broad generalisations regarding the role of the consumer and the growth of a mass market for photography from the 1880s have usually been contextualised around the role of George Eastman, the Kodak company and the amateur photographer.

The relatively small size of the photographic industry compared to many other commercial sectors and an absence of data regarding changes in production or consumption have encouraged economists and business historians to focus their research on other, more fruitful areas. There were, of course, a handful of exceptions discussed later, of which Reese Jenkins's 1975 *Images and Enterprise* remains the definitive study of a national photographic industry. The few published papers since then dealing with photographic manufacturing have generally ignored the nineteenth century to concentrate on the mid to late twentieth century and then only examining narrow aspects such as the introduction of a new film format or aspects of contemporary photographic marketing.<sup>2</sup> This chapter presents a review of published material of direct relevance to this study. It deals with photographic publications, publications dealing with photography and, finally, contextual literature to illuminate wider themes relevant to this study.

### **The literature of photography**

The literature of photography falls into a number of distinct areas. There are the general histories of photography and of certain themes within photography; some of these deal with the industry, and the business and retailing of cameras and film. There are also specific thematic histories of particular firms, products or individuals. Falling within

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<sup>2</sup> For example see: Kamal A. Munir and Nelson Phillips, 'The birth of the 'Kodak Moment': institutional entrepreneurship and the adoption of new technologies', *Organization Studies*, 26 (11), 2005, pp. 1665-1687, and Don Slater, 'Marketing mass photography' in Davis and Walton (eds.), *Language, image, media*, Oxford: Basil Blackwell, 1983, pp. 245-263.

this group is a large number of publications aimed at collectors of photographs and cameras which, although often no more than extended listings, can be useful repositories of data. There is also material within the literature of photography for the period 1839-1914, which offers an insight into some of the themes explored herein and is important in the absence of any later analytical material. The key studies that are important for the present study are discussed separately.

### *Histories of photography*

There have been three important surveys of the historiography of photography - by Douglas Nickel, Anne McCauley and Martin Gasser. These highlight through its absence in these, that an economic and business history of photography has yet to be written.<sup>3</sup> An examination of published histories does little to dispel that assessment. The first photographic histories appeared in the early photographic manuals and handbooks of the 1840s and 1850s, and they repeated the discoveries of the early pioneers through an established chronology. They generally reported the experiments of Scheele and Wedgwood in the late eighteenth century and the work of Niépce and Daguerre and Talbot in the early nineteenth century.<sup>4</sup> Thereafter they incorporated subsequent improvements to processes, up to their date of publication, which were taken from other publications and the photographic press.

Distinct published histories of photography date from the 1880s and provide an all-encompassing survey from photography's pre-history and later landmark technical developments. Some broadened these by noting stylistic movements using key

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<sup>3</sup> Douglas R. Nickel, 'History of photography: the state of research', *The Art Bulletin* vol. 83 no. 3 (September, 2001), pp. 548-558; Anne McCauley, 'Writing photography's history before Newhall', *History of Photography*, vol. 21 no. 2 (Summer 1997), pp. 87-101; Martin Gasser, 'Histories of photography 1839-1939', *History of Photography*, vol. 16 no. 1 (Spring 1992), pp. 50-60. Each provides a detailed discussion of the development of photographic history as a discipline and the historiography of the subject.

<sup>4</sup> As typical examples, R. J. Bingham's *Photogenic manipulation*, London: George Knight and Sons, 1847, followed this format over the first six pages before commencing a discussion of the apparatus and materials required; Robert Tyas's *The hand-book of heliography*, London: Robert Tyas, 1840, spends the first thirty-four pages with a history and detailed description of Daguerre's work.

personalities and events as the foundation stones under-pinning the prevailing narrative. This approach was adopted by all the authors of the foremost works amongst whom were W. Jerome Harrison in 1888, William Shepperley in 1929, Beaumont Newhall in 1937, Josef M. Eder in 1945 and Erich Stenger in 1958, through to Helmut and Alison Gernsheim's classic photographic history of 1955. Within all of these the industry of photography was generally ignored or at best covered superficially. This was usually done by quoting a statistic to illustrate the number of carte-de-visite being published or reviewing the position of the Eastman Kodak Company to illustrate the growth of popular photography. The role of the photographic studio received greater prominence than the wider manufacturing industry and photographic retailing, highlighting the perceived importance of the studio photographer. It also reflected the availability of source material within the photographic journals.

Of the published histories, Harrison's was a scientific and technical history based on the research he had undertaken for his bibliography of photography published in the *Photographic News*.<sup>5</sup> It concentrated on the individuals, processes and applications of the medium ignoring the aesthetics, studios and commerce. Its strength lay in the discussion of the evolution of the photographic dry plate and its rise to a position of dominance by the time of publication in 1888. Shepperley's aim for his book was 'to offer a history of the Art...we have not intended it to be of the nature of a treatise on the science or practice of Photography'.<sup>6</sup> He did, however, deal with technical developments and included a short chapter on the photographic trade, press and societies, and presented brief corporate histories of companies active at the time of publication. No effort was made to relate commerce to the wider history of the subject.

Eder's history published in English in 1945, was based on his fourth German edition of 1932. He stated that he hoped 'to present more than a narrow technical history of photography, I have tried to record the development of photography in relation to the

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<sup>5</sup> W. Jerome Harrison, *A history of photography*, Bradford: Percy Lund and Co., 1888.

<sup>6</sup> William Shepperley, *A history of photography*, London: Arthurs Press, n.d. [1929], n.p.

events of the time and its application'.<sup>7</sup> He succeeded with the technical history but he failed to record the business of manufacturing. Furthermore, he only noted particular companies in the context of a significant individual or when a company developed a particular process or an innovative piece of equipment. It was, however, carefully researched and referenced, albeit with a tendency to over-emphasise the contribution of German and Austrian workers. Stenger's history, while adopting the approach of previous histories and concentrating on the technical aspects, included a chapter titled 'profession and hobby'.<sup>8</sup> Part of this dealt with photography as a trade and, although it dwelt on the photographic portrait studio, it presented some statistics on the number of cameras in use and the number of businesses concerned with photography.<sup>9</sup> As with Eder there was a focus on the German industry, in part reflecting the greater availability of statistics collected by the German government. The limited statistics that concerned Britain were mainly culled from the photographic press.

Beaumont Newhall was an art historian and used this background to produce a history of photography arranged thematically rather than chronologically. More precisely his book was a history of the photograph. It was originally published in 1937 and revised in 1964, and it ignored the growth of the amateur and popular photography.<sup>10</sup> Even a chapter titled 'portraits for the million' only concentrated on the commercial portrait studio. There was no discussion of the manufacturing of equipment and little about sensitised materials. George Eastman and the Eastman Kodak Company failed to be discussed beyond their involvement with motion picture film and colour photography.

Helmut Gernsheim, who was an art historian and photographer by training, in

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<sup>7</sup> J. M. Eder (transl. J. Epstein), *History of photography*, New York: Columbia University Press, 1945, p. ix.

<sup>8</sup> Erich Stenger, *The march of photography*, London: Focal Press, 1958. It first appeared in German in 1950.

<sup>9</sup> Erich Stenger, *The march of photography*, London: Focal Press, 1958, pp. 225-228. The statistics given, which are mostly not referenced, appear to have been taken from British photographic periodicals and are not set within a wider narrative.

<sup>10</sup> Beaumont Newhall, *The history of photography from 1839 to the present day*, New York: Museum of Modern Art, 1964.

collaboration with his wife Alison, produced his now classic history in 1955. The original was expanded and revised in 1969 and then further revised and reissued in three volumes in the 1980s. The book was a turning point. For the first time a history attempted in part to place photography within the context of a mass market via the large-scale production of apparatus and materials and technical improvements with photographic gelatine emulsion.<sup>11</sup> The account, in just over three pages, is simplistic and Gernsheim identifies 1880 as the crucial year:

For the first time in its history, everything about photography was mass-produced, from the apparatus, plates, films, and paper, to the pictures themselves. Once manufacturers had discovered a goldmine in the millions of amateurs the world over, they exploited credulity by skilful advertising and salesmanship of superfluous gadgets which they claimed would give better results.<sup>12</sup>

The text is not supported by substantive evidence and lacks detailed interpretation of the facts. It remains important because a photographic historian had described a relationship between the manufacturer, technical developments and the consumer. The later editions failed to develop this further, and largely repeated the text of the first edition.<sup>13</sup>

Since the 1970s the all-encompassing photographic history has largely been superseded by histories concentrating on particular themes, aesthetics, photographers, or movements. None of these included the manufacturing industry within their respective scope – even those dealing with popular photography. One book which dealt with some of the material in this thesis is *The story of popular photography* of 1989. It was published in association with the National Museum of Photography, Film and Television, Bradford, and reflected some themes of the physical exhibition space. Two chapters dealt with the mass market for photography. One looked at the period mainly up to the 1880s through the market for photographs and the role of the studio and

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<sup>11</sup> Helmut Gernsheim, *The history of photography. From the earliest use of the camera obscura in the eleventh century up to 1914*, London: Oxford University Press, 1955, pp. 310-313.

<sup>12</sup> Helmut Gernsheim, *The history of photography. From the earliest use of the camera obscura in the eleventh century up to 1914*, London: Oxford University Press, 1955, p. 311.

<sup>13</sup> Helmut and Alison Gernsheim, *The history of photography. From camera obscura to the modern era*, London: Thames and Hudson, 1969, pp. 422-425.



publishers. The second examined the introduction of roll film and Kodak's contribution to this.<sup>14</sup> Neither David Allison nor Brian Coe, the respective chapter authors, addressed the broader manufacturing and retailing aspects of their subject; nor did they attempt to deal with the wider societal and economic changes that affected photography, although aspects were covered elsewhere.

*Jenkins, McCauley and Edwards*

The three histories which have a direct resonance with this present study are Reese Jenkins's 1975 study which has been previously mentioned, Anne McCauley's 1994 study of commercial photography in Paris which, although broader in scope, includes much useful data on manufacturers and the wider demand for photography, and Steve Edwards's study of English photography as a commercial and artistic enterprise.<sup>15</sup>

Reviewed in 1976 Jenkins's work was described as the first 'detailed analysis of an industry whose changing technology has exerted a profound effect on its every phase, from production and distribution to the basic business perceptions of its major participants'.<sup>16</sup> Jenkins adopted a model of business-technological interactions which he applied to the key changes within photography: the move from the daguerreotype to wet collodion; from wet collodion to gelatine; the introduction of roll film; and the beginnings of cinematography. His work was rooted in a market-driven economic approach coupled with a changed business approach, which was then being propagated

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<sup>14</sup> Colin Ford (ed.), *The story of popular photography*, London: Century Hutchinson, 1989, pp. 42-59, 60-89. The book was produced to commemorate the opening of the Kodak Museum at the NMPFT, Bradford, following its removal from Harrow and the 150<sup>th</sup> anniversary of the announcement of photography.

<sup>15</sup> Reese V. Jenkins, *Images and Enterprise. Technology and the American photographic industry 1839 to 1925*, Baltimore: The John Hopkins University Press, 1975; Elizabeth Anne McCauley, *Industrial Madness. Commercial photography in Paris 1848-1871*, New Haven: Yale University Press, 1994; Steve Edwards, *The making of English photography: allegories*, Pennsylvania: Pennsylvania State University Press, 2006.

<sup>16</sup> Leonard S. Reich, 'Book Review: Images and Enterprise', *The Business History Review*, vol. 50, no. 3 (Autumn, 1976), pp. 389-390.

by the economic historian Alfred Chandler.<sup>17</sup>

McCauley's approach was to look at the photographic studio rather than the industry. One reviewer of McCauley's study observed that it 'provides a panoramic survey of the leading commercial enterprises and businesses through which photographs reached consumers in the 1850s and 1860s'.<sup>18</sup> Within it, an extensive chapter on the business of photography, from the perspective of the studio, explored the rapid growth of the industry in response to consumer demand.<sup>19</sup> McCauley used the term 'photographic industry' to describe the portrait studio and attempts to quantify the size and growth of it through contemporary statistics and proxies such as patent activity and corporate structure. The wider industry as defined here receives only passing mention but McCauley's work is important and relevant here in its methodological approach and in the selected sources.

Edwards' *The making of English photography* is concerned with the first decades of English photography and discusses photographic studios and their need for artistic recognition. Its detailed research and subject matter ensure that there are many touch points with the wider industry, although this was not his primary intent. As with McCauley, Edwards examines aspects of the French and English manufacturing industries and focuses on commercial portrait studios and publishers. This precludes the detailed examination that Jenkins gave to the American scene. For Jenkins the consumer was considered within the larger economic and entrepreneurial model he adopted; for McCauley the consumer is the mass-market for the portrait photograph; and for Edwards the artistic status of the photographer and its impact on the consumer is his

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<sup>17</sup> Reese V. Jenkins, *Images and Enterprise. Technology and the American photographic industry 1839 to 1925*, Baltimore: The John Hopkins University Press, 1975, pp. 2-7. Chandler had been an exponent of the 'visible hand' of greater capital, larger manufacturing plants and changing management to effect industrial change and success. This work was brought together in his 1977 publication *The visible hand*, Cambridge: Harvard University Press, 1977.

<sup>18</sup> Jonathan Crary, 'Review: Industrial Madness', *The American Historical Review*, vol. 101, no. 3 (June, 1996), p. 855.

<sup>19</sup> Elizabeth Anne McCauley, *Industrial Madness. Commercial photography in Paris 1848-1871*, New Haven: Yale University Press, 1994, pp. 47-102.

prime consideration. In each case the consumer made demands on an aspect of photography but was not the key driver on the wider industry as with this study.

#### *Products, firms and individuals*

The standard histories of photography have failed to deal with photographic manufacturing and the growth of consumer demand in any systematic way so it has fallen to other more subjective histories to deal with limited aspects of these. Even here Britain's photographic industry has attracted little attention compared with France, Germany or the United States, although there are a few exceptions.<sup>20</sup> Traditionally these publications have mostly targeted collectors of photographic equipment but since the early 1970s there has been an increasing amount of literature dealing with the history of the camera. Other than Coe's *Cameras* of 1978, which remains the definitive history of the camera, they have focused on the products of individual manufacturers or, more rarely, they record the output of a particular geographic area, for example, Rochester or Dresden, or they are a national survey dealing with, for example, France, Spain, Hungary or the Netherlands.<sup>21</sup>

Along with these there have been a small number of thematic studies looking at particular types of cameras such as 35mm or reflex. Most have been no more than extended listings, although they have generally attempted to provide a short historical context for their subject. All have been focused on their topic narrowly and rarely stray outside of their main subject matter. The principal British examples include the products

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<sup>20</sup> In terms of book length publications some are noted below. The Photographic Collectors Club of Great Britain's journal *Photographica World* has included short articles of variable quality on British firms and their products and a limited amount of biographical information.

<sup>21</sup> As examples: camera histories include: Brian Coe, *Cameras. From daguerreotype to instant pictures*, London: Marshall Cavendish, 1978; Michel Auer, *The illustrated history of the camera from 1839 to the present*, Kings Langley, Fountain Press, 1975; R. C. Smith, *Antique cameras*, Newton Abbot: David & Charles, 1975; Edward Holmes, *An age of cameras*, Kings Langley, Fountain Press, 1974; manufacturers: Brian Coe, *Kodak cameras. The first hundred years*, Hove: Hove Foto Books, 1988; W. & E. Marder, *Anthony. The man, the company, the cameras*, Pine Ridge: Pine Ridge Publishing Co., 1982; Douglas Collins, *The story of Kodak*, New York: Harry N. Abrams, 1990; national surveys: Norman Channing & Mike Dunn, *British Camera Makers*, Esher: Parkland Designs, 1996; J-P Francesch, M. Bovis and J. Boucher, *Les appareils photographiques français*, Paris: Maeght Éditeur, 1993; are examples.

of Lancaster, Newman and Guardia and Thornton-Pickard from the period before 1914 and the products of K. G. Corfield and Wray from after 1945. There are two geographically-based studies. David Davies's paper on Manchester camera makers was published in the United States and surveys the Manchester scene - giving brief histories of the main companies. Channing and Dunn's *British camera makers* provides a directory of the main companies and their products.<sup>22</sup> In 2009 an online resource which overlaps with and extends Channing and Dunn's book was launched.<sup>23</sup>

There have been a small number of studies of individual manufacturing firms which have concentrated on corporate history. The history of the Eastman Kodak Company has been the subject of a number of these and other American manufacturers, such as the Anthony companies, have also been documented.<sup>24</sup> Within Britain, a centenary study of Ilford Limited is the only substantive photographic corporate history.<sup>25</sup> Various smaller publications on other British manufacturers and retailers have appeared since the 1980s.<sup>26</sup>

Supporting the corporate histories are a small number of biographies of individuals involved in photographic manufacturing. George Eastman and his role in Kodak has been tackled several times since Carl Ackerman's 1930 authorised biography of which Elizabeth Brayer's 1996 study is the most recent and detailed of these, and it inevitably includes material relevant to Kodak in Britain.<sup>27</sup> Other than Wratten and Wainwright and the Kodak research chemist Dr Kenneth Mees there have been no book-length

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<sup>22</sup> David A. Davis, 'The Manchester camera makers 1853-1940', *The Photographer*, no. 68/69, Winter/Spring 1986, pp. 10-33. Norman Channing and Mike Dunn, *British camera makers. An A-Z guide to companies and products*, Esher: Parkland Designs, 1996.

<sup>23</sup> Early photography, a website based around a collection of cameras and photographic equipment from the 1850s to 1950s, <http://www.earlyphotography.co.uk/> (accessed 1 September 2009).

<sup>24</sup> See note 21.

<sup>25</sup> R. J. Hercock and G. A. Jones, *Silver by the ton. A history of Ilford Limited 1879-1979*, Maidenhead: McGraw-Hill Book Company, 1979. There are several unpublished histories of Kodak Ltd.

<sup>26</sup> An example is: E. H. Richards, *The Manchester camera shop*, Altrincham: E. H. Richards, n.d. [1984].

<sup>27</sup> Carl W. Ackerman, *George Eastman*, London: Constable and Company, 1930; Elizabeth Brayer, *George Eastman. A biography*, Baltimore: The John Hopkins University Press, 1996.

biographies of individuals involved in British photographic manufacturing or retailing.<sup>28</sup> However, a number of articles about such people have been published in the 2008 *Encyclopedia of nineteenth century photography* and in *Photographica World*, and there is some limited coverage of photographic personalities in the *Dictionary of national biography*.

### Contemporary literature

The photographic periodicals of the nineteenth and early twentieth centuries are key primary source material. They rarely provide any substantive interpretation of facts but their commentary and occasional insight is important, in addition to them being sources of data. In the period before the 1870s they generally avoided the business aspects of photography but increasingly from the later 1870s, the *British Journal of Photography*, in particular, began broadening its scope and matters pertaining to manufacturing and retailing and the photographic trade were given greater prominence.

This was initially achieved through a series of articles dealing with visits to particular photographic studios and firms. During the 1880s the *British Journal of Photography* ran a short series under the general heading of 'Photographic Industries' and in the 1890s a series 'Photographic Workers at Work' appeared, although this concentrated mainly on photographic portrait studios. Other journals such as *The Photogram* and the trade publication *The Photographic Dealer* also published occasional reports of visits to photographic manufacturers. While these are mainly descriptive they sometimes placed

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<sup>28</sup> T. H. James and C. E. K. Mees, *Charles Edward Kenneth Mees, pioneer of industrial research*, Rochester, N.Y.: Eastman Kodak Company, 1990.

their subject into a wider context and made note of more general trends within the industry.<sup>29</sup>

All the journals increasingly made editorial comments or ran notices linked to important commercial events such as a share offering, and patent applications were reported systematically from the 1890s. From 1900 the *British Journal of Photography* began more concentrated commercial reporting and soon afterwards introduced a 'Commercial and Legal Intelligence' column recording the formation of new companies and matters of specific business relevance. The *Photographic News* followed suit.

### Contextual literature

The interdisciplinary nature of this study means that there are a number of related areas which, although they have no immediate photographic content, are important for

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<sup>29</sup> The *British Journal of Photography* series 'Photographic Industries' ran during 1884 and featured 'The lantern factory of Messrs W. H. Oakley & Co.' (vol. 31 no. 1256, 30 May 1884, pp. 343-344); 'The Sciopicon Company' (vol. 31 no. 1260, 27 June 1884, pp. 406-407); 'A West End Studio' (vol. 31 no. 1263, 18 July 1884, 454-456); 'A lantern slide painter's studio' (vol. 31 no. 1280, 14 November 1884, pp. 728-729); 'The Argentic Bromide Works of Messrs Morgan and Kidd' (vol. 31 No. 1281, November 21 1884, pp. 742-743). 'Photographic Workers at Work' ran between 1896 and 1898 and featured: 'I. How Messrs. Newman & Guardia make a hand camera' (no. 1863. vol. 43. 17 January 17 1896, pp. 38-39); 'II. How Mr R. R. Beard makes a regulator' (The Lantern Record. Monthly Supplement. 6 March 1896, pp. 20-22); 'III. How Messrs. Wellington & Ward make bromide papers' (no. 1875. vol. 43. 10 April 1896, pp. 230-231); 'IV. How Messrs. Beck Make a "Frena"' (no. 1878. vol. 43. 1 May 1896, pp. 279-280); 'V. Messrs. Illingworth & Co. at Willesden Green' (no. 1882. vol. 43. 29 May 1896, pp. 342-343); 'VI. Messrs B. J. Edwards at Hackney' (no. 1885. vol. 43. 19 June 1896, pp. 393); 'VII. How a "Meisenbach" Block is Made' (no. 1886. vol. 43. 26 June 1896, pp. 407-408); 'VIII. Messrs. Marion & Co. at Southgate' (no. 1887. vol. 43. 3 July 1896, pp. 422-423); 'IX. Messrs Adams & Co. in Bunhill-row' (no. 1888. vol. 43. 10 July 1896, p. 443); 'X. The Autotype Company at Ealing Dene' (no. 1892. vol. 43. 7 August 1896, pp. 504-505); 'XI. The Brighton Photographic Company at Brighton' (no. 1897. vol. 43. 11 September 1896, pp. 581-582); 'XII. Messrs G. W. Wilson & Co., at Aberdeen' (no. 1910. vol. 43. 11 December 1896, p. 790); XIV. The Sandell Works Company at South Norwood. Selhurst-road, South Norwood' (no. 1935 vol. 44. 4 June 1897, p. 361); 'XV. Messrs J. Bulbeck & Co., at 167, Strand, W.C. Architectural photographers' (no. 1936 vol. 44. 11 June 1897, p. 374); 'XVI. Mr David Allan, at 157 Whitfield-street' (no. 1945 vol. 44. 13 August 1897, pp. 521-522); 'XVII. The Gem Dry Plate Company, at Willesden Green' (no. 1948 vol. 44. 3 September 1897, p. 569); 'XVIII. Messrs Voigtlander & Sohn, Brunswick' (No. 1953 vol. 44. October 8 1897, pp. 648-649); 'XIX. The Carl-Zeiss Stiftung' (no. 1966. vol. 45. 7 January 1898, pp. 6-7); 'XX. Messrs. Schott & Genossen, Jena' (no. 1983. vol. 45. 6 May 1898, p. 309); 'XXI. The New Palace of "King Kodak"' (no. 1987. vol. 45. 3 June 1898, pp. 357-358); 'XXII. Messrs C A Steinheil Söhne, Munich' (no. 1996. vol. 45. 5 August 1898, pp. 500-501).

establishing a broader context for photography.

From an economic and industrial perspective these range from macro studies looking at British industrialisation generally, to micro studies of individual industries. Some of these have parallels with the photographic industry such as those dealing with scientific instruments, bicycles or toy making. Kenneth Brown's study of the British toy business since 1700, for example, describes how that industry began on a small scale and then expanded rapidly during the nineteenth century with industrialisation and middle-class prosperity.<sup>30</sup> Where the toy industry differed significantly from photography was that it never underwent the rapid technological change that photography did in the 1870s. The toy market was concentrated whereas photography was larger and more diffuse. In these studies themes of manufacturing change, retailing, foreign competition and the wider societal changes are explored which partially mirror photography.

Studies dealing with scientific instruments and businesses from the pre-1851 period help situate early photographic manufacturing within a relevant context. The Scientific Instrument Society's *Bulletin* has explored companies and individuals within that sector by looking at firms such as Newton, Horne and Thornthwaite, and Negretti and Zambra, who were active in photography's early period manufacturing and retailing photographic goods alongside optical and scientific instruments. Alison Morrison-Low's examination of scientific instrument making in the period up to 1851 and Mari Williams's study of the British and French precision instrument industries between 1870 and 1939 provide useful comparative studies.<sup>31</sup>

The photographic trade increasingly differentiated itself from instrument makers with the growth of a mass-market for much of its output and the move to mass-production which the instrument trade did not replicate. Morrison-Low's reappraisal of the

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<sup>30</sup> Kenneth D. Brown, *The British toy business. A history since 1700*, London: The Hambledon Press, 1996.

<sup>31</sup> A. D. Morrison-Low, *Making scientific instruments in the industrial revolution*, Aldershot: Ashgate Publishing, 2007; Mari E. W. Williams, *The precision makers. A history of the instruments industry in Britain and France, 1870-1939*, London: Routledge, 1994.

importance of provincial manufacturing and London's role in the manufacture of scientific instruments describes a pattern that, in part, is similar to photographic manufacturing although arguably for photography London's dominance was sustained throughout the period. By the 1870s and the period of Williams's study the two industries were largely separate with a limited and a declining number of companies straddling both, although for formal statistical purposes they were often combined. Later on, the optical/scientific and photographic sectors worked together in making representations to government and, on occasion, for sector-wide marketing. Stephen Sambrook's more narrowly defined study makes note of particular optical instrument firms, such as Ross, which worked across sectors, and it provides a broader context for their activities, particularly during the First World War.<sup>32</sup>

There have been many studies looking at broader themes within the history of technology and business, and these have rarely touched on photography.<sup>33</sup> The limited source material for this, which is difficult to access, and the relatively small size of the photographic industry, has precluded it from being used as an example or as a basis to develop wider theories. Ideas from contemporary studies of innovation describing how new products and ideas evolve and become mainstream can be applied retrospectively. Eric von Hippel's ideas, for example, of how innovations are democratised can be used to explain, in part, how photography evolved through the efforts of individuals who may subsequently make their work freely available.<sup>34</sup>

Photography's move from a professional to a larger amateur market, and a time-frame starting in the mid-nineteenth century also make it a distinctive medium. Studies from other areas of business frequently commence well before the 1850s within a different

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<sup>32</sup> Stephen C. Sambrook, *The optical munitions industry in Great Britain 1888-1923*, unpublished PhD thesis, University of Glasgow, 2005.

<sup>33</sup> An exception with a narrow focus is: D. E. H. Edgerton, 'Industrial research in the British photographic industry, 1879-1939' in Jonathan Liebenau (ed.), *The challenge of new technology. Innovation in British business since 1850*, Aldershot: Gower Publishing, 1988.

<sup>34</sup> Eric von Hippel, *Democratizing innovation*, Cambridge: The MIT Press, 2005. Although written from a contemporary perspective von Heppel's ideas can be applied retrospectively with some modification to historical innovations.



economic and social milieu, or they start once a consumer boom was well under way and continue into the twentieth century. The social history of the entire period has been well documented with a number of recent publications examining the role of the leisure and the mass-market.<sup>35</sup> Within these the photographic industry has figured only slightly and photography has mostly been seen as a means of illustrating these histories. The role of photography as a hobby for the working and middle classes has been overlooked in favour of sporting activities. Consequently, amateur photography from the late nineteenth century has been ignored while cinema seems to appeal to researchers.

Although the study of retailing history has developed since the first important study by Jefferys in 1954 his work remains a key text.<sup>36</sup> Now supplemented by a larger supporting literature, conference proceedings and specialised journals the study of retailing history has recently emerged as a discipline in its own right.<sup>37</sup> Some of the themes identified by Jefferys and his successors, such as the role of the department store and multiple chains, new marketing methods and changes in distribution methods are directly relevant to the retailing of photographic goods. Photography adapted some of these new techniques and new retailing developments were applied to photography. The most detailed study dealing with selected aspects of photographic marketing is Nancy Martha West's examination of Eastman Kodak's advertising activities.<sup>38</sup> Since the 1970s the study of business management has attracted the attention of historians. Alfred Chandler's *The visible hand: The managerial revolution in American business* was the pioneering study of the role that changes in management structures had on the growth and development of firms.<sup>39</sup> Although photographic firms do not feature directly in his

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<sup>35</sup> Judith Flanders, *Consuming Passions. Leisure and pleasure in Victorian Britain*, London: Harper Press, 2006.

<sup>36</sup> James B. Jefferys, *Retail trading in Britain 1850-1950*, Cambridge: Cambridge University Press, 1954.

<sup>37</sup> A good general survey is Benson and Shaw's three-volume *The retailing industry*, London: Taurus, 1999. The second volume deals with the coming of the mass market between 1800-1945.

<sup>38</sup> Nancy Martha West, *Kodak and the lens of nostalgia*, Charlottesville: University Press of Virginia, 2000. See also M. Oliver, 'George Eastman's modern stone-age family: Snapshot photography and the Brownie', *Technology and Culture*, 48 (January 2007), pp. 1-19.

<sup>39</sup> Alfred D. Chandler Jr. *The visible hand: The managerial revolution in American business*, Cambridge: Harvard University Press, 1977.

work, his ideas are directly applicable to Eastman Kodak during the period of this work and go some way towards explaining the commercial advantage that the firm was able to achieve both in the United States and in Britain. This is discussed further in Chapter 5.

The wider economic and social histories of the nineteenth and early twentieth centuries have generally been well researched and concisely summarised in several publications.<sup>40</sup> Again, none deal specifically with photography but several have helped suggest themes that resonate within this study. Parts of Colli's history of family businesses and Wilson's *Business history*, for example, have relevance to photographic firms and later chapters develop aspects of their work.<sup>41</sup>

## Summary

The absence of any history of photographic manufacturing or retailing from Britain in the three surveys of photography's histories by Nickel, McCauley and Gasser highlights a remarkable omission in the writing of photography's histories. Since the last of these was published in 2001 nothing else has been published in the intervening period up to early 2010 to change this view.

The wider literature relating to the industry of photography and, more specifically, to photographic manufacturing and retailing is sparse. The British experience is poorly represented when compared to that of the United States and continental Europe. The reasons for this are two-fold. Firstly, there is scant primary source material and that

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<sup>40</sup> For example, R. B. Mitchell and Phyllis Deane, *Abstract of British historical statistics*, Cambridge: Cambridge University Press, 1976; Chris Cook, *The Routledge companion to Britain in the nineteenth century, 1815-1914*, Abingdon: Routledge, 2005.

<sup>41</sup> Examples include: Andrea Colli, *The history of family businesses 1850-2000*, Cambridge: Cambridge University Press, 2003; John F. Wilson, *British business history, 1720-1994*, Manchester: Manchester University Press, 1995; Michael Dintenfass, *The decline of industrial Britain 1870-1980*, London: Routledge, 1992; R. A. Church, *The great Victorian boom 1850-1873*, London: Macmillan Press Ltd, 1975.

which is available is very diffuse. Secondly, as the historiography of photography shows the discipline has focused on aspects of the photographic image reflecting the art-historical background of many historians and the ability of other disciplines to place their own readings on to photographs.<sup>42</sup>

The argument that this reflects a weakness in photographic history as a discipline is outside the scope of this study but the following chapters show a distinctive history of photography separate from the aesthetics. Furthermore, any reading of the photograph cannot be undertaken by historians of photography or from other disciplines without a deeper understanding of different photographic histories of which photographic manufacturing and retail history is seminal.

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<sup>42</sup> Elizabeth Edwards has developed a new approach to the reading of photographs. For example see: Elizabeth Edwards, 'Unblushing realism and the threat of the pictorial: Photographic survey and the production of evidence 1885-1918', *History of Photography*, vol. 33, no. 1 (February 2009), pp. 3-17.

## Chapter 3. The early period

***'persons desirous of purchasing an apparatus cannot be too strongly urged to apply to opticians of respectability and talent in their profession' (1853) <sup>1</sup>***

### Science and Industry before photography

Photography, and the way it was commercialised, partly emerged out of a new scientific method. In addition, it was part of a wider industrial revolution that was still underway when the daguerreotype and photogenic drawing processes were introduced in 1839. The scientific revolution had begun in the seventeenth century and was mainly a London-based movement centred on the Royal Society for the Improvement of Natural Knowledge, which had been formed in 1660. Science was moving away from 'natural magic' to a more rigorous discipline known as natural philosophy within which chemistry was seen as a discipline in its own right. Empiricism, or experimentation by trial and error, was still the dominant scientific method at the middle of the eighteenth century as exemplified by the work of a number of scientists such as Priestley and Cavendish. This had led to the development of a scientific method built upon careful observation and experiment coupled with a theoretical basis.

The British scientific instrument trade had developed from the end of the middle ages out of the need for accurate measurement in navigation, surveying and construction.<sup>2</sup> New instruments were introduced in the seventeenth and eighteenth centuries to support

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<sup>1</sup> N. P. Lerebours (transl. J. Egerton), *A treatise on photography*, London: Longman, Brown, Green, and Longmans, 1853, p. xvii.

<sup>2</sup> This general survey of scientific instrument making is taken in part from Gloria Clifton, *Directory of British scientific instrument makers 1550-1851*, London: Zwemmer with the National Maritime Museum, 1995, p. xi.

scientific experimentation. These included optical instruments such as the telescope and microscope and, from the later seventeenth century, philosophical instruments that were designed to explore or reveal the natural world, which included new measuring devices such as the thermometer and barometer and electrical machines used to explain natural phenomena. From the mid-nineteenth century these were all known collectively as 'scientific instruments'.<sup>3</sup>

The establishment of the Society for the Encouragement of Arts, Manufactures and Commerce in 1754 was important for promoting science and in bringing together scientists and industrialists, with the latter eager to exploit new discoveries and methods of manufacturing.<sup>4</sup> Popular courses in natural philosophy satisfied a wider interest in science and its application to industry whilst knowledgeable itinerant lecturers in the provinces and an increasing number of publications supported this interest. There was also greater collaboration between scientists and industrialists such as Matthew Boulton and James Watt, and Josiah Wedgwood, who incorporated science in their manufacturing activities.

By the end of the eighteenth century this movement was largely provincial. It found expression through the many emerging philosophical societies, which had amongst their members increasing numbers of industrialists. During the nineteenth century mechanics' institutions which catered for the working man and lower middle-classes further supported this movement.<sup>5</sup>

Scientific and technological factors were by no means solely responsible for the industrial revolution. Economic and social changes of the time were causally connected

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<sup>3</sup> Liba Taub, 'On scientific instruments', *Studies in history and philosophy of science*, 40(2009), pp. 337-343. Taub suggests that the term 'scientific instrument' was coined around 1830 and was well-established by 1850. She provides a useful discussion of the terms used to describe different parts of the trade.

<sup>4</sup> More generally known as the Society of Arts and later the Royal Society of Arts (RSA).

<sup>5</sup> The first mechanics' institution with an experimental programme and library was the Society for Promoting the Useful Arts in Scotland founded in Edinburgh in 1821. By 1851 there were seven hundred institutions in Britain with a combined membership of 110,000. They were intended to provide adult education, particularly of technical subjects for working men, a library and a programme of lectures.

to it, with traditional methods of investigation and rule-of-thumb procedures remained in many industries.<sup>6</sup> The industrial revolution gathered pace throughout the eighteenth century and Britain's economic and political situation aided it. Indeed, it owed much to a politically unsettled continental Europe in contrast to which Britain's stability was attractive - it offered a supportive environment that was able to nurture and commercialise discoveries made elsewhere. John Farey, speaking to the Select Committee on Patent Laws in 1829, noted that 'we have derived almost as many good inventions from foreigners, as we have originated ourselves'.<sup>7</sup> The greater availability of capital and freedom for private enterprise proved attractive and there was an expectation that experimentation, by whichever method, could be turned to profit through manufacture. Robert Schofield summed up the idea that science could intertwine with commerce to bring about financial reward. Writing about the Birmingham group of scientists and manufacturers known as the Lunar Society he noted that 'before 1760 the influence of manufacturers and inventors was negligible, after 1830 it was so pervasive as to be unremarkable'.<sup>8</sup>

#### *Scientific instrument making*

The photographic industry would initially follow some of the paths previously trodden by scientific instrument manufacturers but there was one significant difference: the market for photography was to be more firmly rooted in much larger professional and amateur markets. This ensured that certain firms that adopted techniques of mass-production and retailing were better able to prosper. Those photographic businesses that did not, like the instrument makers before them, gradually disappeared.

Britain had been enjoying a consumer boom since the late seventeenth century which was particularly evident amongst the well-to-do middle classes. The scientific

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<sup>6</sup> A. E. Musson and Eric Robinson, *Science and technology in the industrial revolution*, Manchester: Manchester University Press, 1969, pp. 7-8.

<sup>7</sup> Quoted in Musson and Robinson, *Science and technology in the industrial revolution*, p. 63.

<sup>8</sup> Robert E. Schofield, *The Lunar Society of Birmingham*, London: Oxford University Press, 1963. p. 6.

instrument trade, which was later to take up manufacturing and retailing photography from 1839, had benefited significantly from this. For the best manufacturers their prestige and rewards grew rapidly paid for by a 'clamouring' public.<sup>9</sup>

Francis Hauksbee established in London, around 1704, the first commercial production of instruments of natural philosophy. Prior to this they had usually been made by scientists themselves or by craftsmen under close supervision from their commissioner. Instrument makers were not simply manufacturers, they were also active in advancing the underlying science through their own observations and discoveries, and most took an active part in the wider scientific community. Other manufacturers joined Hauksbee and London continued to be the principal centre for the manufacture of scientific instruments well into the twentieth century, although there were significant numbers in the provinces.<sup>10</sup> The presence of the Royal Society, the Board of Longitude and the Royal Observatory, provided the professional support for the manufacturers. King George III, who formed a significant collection of scientific instruments, was at the head of an amateur interest in science which filtered down to an increasingly affluent middle class.

Nationally, the makers of scientific instruments were concentrated in London and their number had grown significantly from the mid-eighteenth century. In 1751 some 232 scientific instrument makers were known to be working within the British Isles of which 161 were in London. By 1851 this had risen to 837 with 498 in London.<sup>11</sup> The principal regional centres included Glasgow, Liverpool, Manchester and Newcastle, which were ports and industrial centres providing businesses with an immediate market for their

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<sup>9</sup> Roy Porter, 'The economic context' in Roy Porter, Simon Schaffer, Jim Bennett and Olivia Brown, *Science and profit in 18<sup>th</sup> century London*, Cambridge: The Whipple Museum of the History of Science, 1985, p. 3.

<sup>10</sup> Roy Porter, 'The economic context' in Roy Porter, Simon Schaffer, Jim Bennett and Olivia Brown, *Science and profit in 18<sup>th</sup> century London*, Cambridge: The Whipple Museum of the History of Science, 1985, pp. 1-4. Morrison-Low has provided evidence of a strong provincial scientific instrument trade, although Porter's general assertion that the best gravitated to London remains correct.

<sup>11</sup> Gloria Clifton, *Directory of scientific instrument makers 1550-1851*, London: Zwemmer with the National Maritime Museum, 1995, p. xv.

output or supplying a source of materials with which to make the instruments.

The three markets of the scientific, professional and dilettante or amateur were all in the greatest numbers in London, which was also well placed to service outlying markets. There were close ties between individual instrument makers and geographically they were concentrated around Fleet Street, Ludgate Hill and St Paul's, although others spread along the main shopping streets of the Strand to Charing Cross further west. Many were linked by apprenticeships, marriage and inheritance.<sup>12</sup> Similar geographic, business and family links were later found amongst the early photographic manufacturers.

Although scientific instruments were largely hand crafted some machine tools had been introduced for more efficient and precision manufacturing, which alongside cheaper supplies of steel, lead and copper supported the making of scientific instruments to higher standards. Their use also helped to keep manufacturing costs down, which boosted sales. The commercialisation of leisure during the late eighteenth century provided clients for instrument makers, particularly philosophical instruments such as microscopes and telescopes. These could be used without the need for an understanding of scientific theory and did not require any complex manipulation, but they provided visibility into unseen worlds.

By the early nineteenth century the scientific institutions had begun to stagnate and there was a declining interest in science in England, which Charles Babbage deplored publicly in 1830. The majority of instrument makers had simply become manufacturers, contributing their technical and engineering skills to the manufacture of instruments and supplying an organized scientific elite. Science, which had become more complex and specialised, increasingly excluded the manufacturing trade from its investigations, although a small number of individual manufacturers were able to maintain their former

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<sup>12</sup> Olivia Brown, 'The instrument-making trade' in Roy Porter, Simon Schaffer, Jim Bennett and Olivia Brown, *Science and profit in 18<sup>th</sup> century London*, Cambridge: The Whipple Museum of the History of Science, 1985, pp. 19-37.



role. Most, however, were content to concentrate on commerce by making and selling scientific instruments.<sup>13</sup> Soon after these changes had become evident, the 1851 Great Exhibition highlighted the fact that Britain's general industry was increasingly susceptible to being over-taken by faster-growing American and European competitors. There was recognition that better social and material rewards and technical education were needed if Britain was to maintain its pre-eminent commercial position. The instrument making trade was generally conservative and had held on to long-established techniques.<sup>14</sup> Although there was a limited amount of machine-aided processes which superseded some manual labour there was no commercial imperative for the mass-production of scientific instruments. Unlike photography later in the century the pre-industrial methods of construction using skilled craftsmen with limited specialisation were sufficient to meet demand.

By the time photography arrived early in 1839 London was established as the principal centre for the manufacture and retailing of scientific instruments as well as providing the main market for their consumption. Cities such as Manchester, Liverpool, Sheffield, Bristol and Birmingham were important secondary centres. Scientific instrument makers were increasingly concerned with the need to broaden their businesses and photography provided an opportunity to retail and then manufacture a new range of goods which were based in science. These could be sold to an existing clientele and would bring in a new audience fascinated with the idea of making photographs.

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<sup>13</sup> J. A. Bennett, 'Instrument makers and the 'decline of science in England': the effect of institutional change on the elite makers of the early nineteenth century' in Roy Porter, Simon Schaffer, Jim Bennett and Olivia Brown, *Science and profit in 18<sup>th</sup> century London*, Cambridge: The Whipple Museum of the History of Science, 1985, pp. 13-27.

<sup>14</sup> W. D. Hackmann, 'The nineteenth-century trade in natural philosophy instruments in Britain' in P. R. de Clercq, *Nineteenth-century scientific instruments and their makers. Papers presented at the fourth scientific instrument symposium, Amsterdam 23-26 October 1984*, Amsterdam: Rodopi, 1985, pp. 53-91.

## Photography's experimental phase

### *Competing processes*

Experiments to make and fix an image by chemical means had been undertaken independently by Louis Jacques Mandé Daguerre in France and William Henry Fox Talbot in Britain. Both came to public attention in January 1839.<sup>15</sup> In France Daguerre had been trying to secure the sale of his daguerreotype process privately without success since the summer of 1837 so instead he sought government interest.<sup>16</sup> Under great secrecy he approached François Arago who reported on the invention to the French Academy of Sciences on 7 January 1839. By June an agreement had been drawn up with the French government offering an annual pension to Daguerre of 6000 francs and 4000 francs to his partner Isidore Niépce, the son of Nicéphore Niépce, Daguerre's original collaborator. In return, the working of the process was to be disclosed and this was done before the Academy on 19 August 1839. Daguerre had already obtained a patent for the process in England and Wales on 14 August 1839 and, with this exception, the daguerreotype process was made available by the French government to the world.<sup>17</sup>

In Britain Talbot had been experimenting with securing an image on paper by chemical means since 1834 and during that summer had managed to produce what Larry Schaaf

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<sup>15</sup> For a general chronology of the early history of photography see: Beaumont Newhall, *The history of photography*, New York: Museum of Modern Art, 1982, and Helmut and Alison Gernsheim, *The history of photography*, London: Thames and Hudson, 1969.

<sup>16</sup> R. Derek Wood, 'A state pension for Mr L. J. M. Daguerre', *Annals of Science*, vol. 54, no. 5 (Summer 1997), pp. 489-506. The Gernsheim's in their *L. J. M. Daguerre*, also provide a summary Daguerre's activities before August 1839.

<sup>17</sup> British patent no. 8194, 14 August 1839. Miles Berry, Daguerre's patent agent in London wrote to the Board of the Treasury on 30 March 1840 (The National Archives, Kew, T/1/4429/7150) suggesting that the British government purchase the rights to the daguerreotype for England. The government rejected the suggestion. See: R. Derek Wood, 'The daguerreotype patent, the British government and the Royal Society', *History of Photography*, vol. 4, no. 1 (January 1980), pp. 53-91 and addendum: [www.midley.co.uk](http://www.midley.co.uk) (accessed 1 March 2010).

has called 'rudimentary images' and had made them permanent.<sup>18</sup> Talbot left his experiments after the summer of 1835 and resumed them in late 1838 with a view to developing his work further and publishing his results. News of the French Academy meeting was widely reported and reached Britain where Talbot was hurried into communicating his own photogenic drawing process to the Royal Society on 27 January, with publication on 31 January 1839.

The two photographic processes were markedly different in their operation and in the type of image each produced. Daguerre's process was the more complex in terms of its manipulation and it produced a unique monochrome image on a silvered copper plate. The best daguerreotypes were detailed and clearly defined, although the plate needed to be held at a precise angle to get the best view of the subject (see Illustration 1, top). Talbot's photogenic drawing process was easier to work, and produced simple silhouette-like images on paper. Talbot, who had been rushed into staking his claim for priority, continued to refine his process as originally announced and was able to improve its sensitivity to light, which he patented on 8 February 1841.<sup>19</sup> The new process, which he named the calotype, was more complex in its operation but remained easier to work than the daguerreotype. The calotype negative, or Talbotype as it was also known, could be used to make multiple positive prints, which were monochrome with tones that varied from black and white to chocolate brown and purple hues, depending on the chemicals employed (see Illustration 1, bottom). Both the negative and positive images were formed within the fibres of the paper and took on the characteristics of it. This reduced the definition of the resultant image.

The daguerreotype and calotype were markedly different in terms of their commercial success. By early 1841 both processes were protected by a patent in England and Wales, which limited their commercial exploitation, although the daguerreotype with its superior image quality quickly attracted the interest of individuals wanting to practice it

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<sup>18</sup> Larry J. Schaaf, *Records of the dawn of photography. Talbot's notebooks P&Q*, Cambridge: Cambridge University Press, 1996, p. xiii.

<sup>19</sup> British patent no. 8842, 8 February 1841.

commercially for portraiture. The rights to Daguerre's patent were sold to Richard Beard, a business entrepreneur, who set up Britain's first photographic studio in London, which opened in March 1841. Beard issued regional sub-licences to other photographers and supplied the equipment and materials required to operate the process. He bought out further refinements to the operation of the process which were patented in England and Wales, Scotland and Ireland, which further limited the wider take up of the process, except on his terms.<sup>20</sup> Antoine Claudet, who had secured the right to operate the daguerreotype process directly from Daguerre before the English patent was granted, opened his own studio in London in June 1841. Beard undertook litigation against Claudet claiming patent infringement but was unsuccessful in his action.<sup>21</sup> To protect his investment in the original patent and his own subsequent improvements Beard remained active in prosecuting photographers who failed to take out a licence to operate the daguerreotype process. This action initially had the effect of forcing photographers to abide by the restrictions of the patent. By the early 1850s Beard's business activities had forced his bankruptcy and he was unable to defend his patents in the law courts. This helped to open them up to wider commercial use free from the threat of prosecution.

Talbot also attempted to license his process for commercial use, but it had little appeal for portraiture because of the softness of the image. In London, Henry Collen and Antoine Claudet, both commercial photographers, had taken licences to operate the calotype process from Talbot. By 1845 both had come to the conclusion that the process was not commercially viable and that they had operated it at a loss.<sup>22</sup> The calotype's principal advantage was that it produced a negative from which any number of positive prints could be made. It attracted some commercial interest for applications where

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<sup>20</sup> John Hannavy, 'Richard Beard's Scottish and Irish Patents, and the development of the daguerreotype in those countries', *The Daguerreian Annual 2007*, Cecil: The Daguerreian Society, 2007, pp. 144-157. I am grateful to Professor Hannavy for making a copy of his paper available to me. Beard's patents in England and Wales were 8546 (13 June 1840) and 9292 (10 March 1842). He also used Wolcott's camera which was the subject of patent number 9672 (18 March 1843).

<sup>21</sup> Beard v. Claudet. The National Archives, C13/435/B19.

<sup>22</sup> Roger Taylor, *Impressed by light. British photographs from paper negatives 1840-1860*, New Haven: Yale University Press, 2007, pp. 17-18.

multiple copies were required, such as for use within books. Talbot helped establish a photographic printing establishment in Reading that produced multiple copies of prints for his own publications and for other publishers.<sup>23</sup> Few licences were granted and most portrait photographers operated the daguerreotype process only. However, the calotype attracted greater amateur interest because of its simpler operation and more artistic results. The work of D. O. Hill and Robert Adamson is amongst the best known. Although Talbot intended amateurs to pay a one guinea fee to use the process this policy was not applied consistently and it varied over time. In reality there was little that he could do to police its use.<sup>24</sup>

There were numerous attempts to improve the two pioneering processes, which gradually coalesced around the use of glass as a means of supporting light-sensitive chemicals.<sup>25</sup> The albumen-on-glass process published in 1847 and perfected by Louis-Désiré Blanquart-Evrard in 1849, used albumen as the medium to hold light-sensitive chemicals which was coated on to glass. Frederick Scott Archer, a photographer and sculptor, described his process in *The Chemist* in March 1851 which used collodion on glass.<sup>26</sup> Both these processes offered important improvements over the daguerreotype and calotype in their results, with collodion on glass combining the detail of the daguerreotype with the reproducibility of the calotype (see Illustration 2). The announcement of Scott Archer's wet collodion process and its refinement into a commercially viable and available product by mid-1854 meant that the daguerreotype's commercial dominance was at an end and the process was being used by anyone able to work it. A legal action by Talbot who claimed that his 1841 patent applied to the wet collodion process was, eventually, dismissed. By the mid-1850s the use of the

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<sup>23</sup> See: Larry J. Schaaf, *Out of the shadows. Herschel, Talbot, & the invention of photography*, New Haven: Yale University Press, 1992, pp. 137-151.

<sup>24</sup> H. J. P. Arnold, *William Henry Fox Talbot. Pioneer of photography and man of science*, London: Hutchinson Benham, 1977, pp. 162, 187-188.

<sup>25</sup> See: J. M. Eder, *The history of photography*, New York: Columbia University Press, 1945, for the best detailed description of the technical development of photographic processes.

<sup>26</sup> Frederick Scott Archer, 'Chemical manufactures and agricultural chemistry: on the use of collodion in photography', *The Chemist*, March, 1851, pp. 257-258.

daguerreotype in commercial portrait studios had largely disappeared.<sup>27</sup>

Archer's process with subsequent modifications and the absence of any patent restrictions ensured that it became the dominant photographic process for professional and amateur use, and remained so until the 1870s. The process produced either a negative or a direct positive on glass and its improved sensitivity to light meant that portraiture could be undertaken in studios with a greater degree of certainty and for longer periods during daylight hours than previously possible. The use of glass as a support medium for the negative ensured that the subject was recorded in fine detail with no degradation of the image from the support. The paper required for making a positive also underwent improvements so that the detail in the negative was not lost within the fibres of the positive. To achieve this, a layer of sensitised albumen was coated on to the surface of the paper. This took up the image and the paper simply acted as a support. The emulsion provided detail and a wide tonal range from the wet collodion negative.

The principal disadvantage of the wet collodion processes was that the exposure and subsequent processing had to be undertaken while the plate was still moist which required a dark room close by. Variants of Archer's basic process were proposed some of which offered minor improvements but the basic manipulation remained largely unchanged until it was gradually superseded from the 1870s. Dry collodion processes were also described and introduced but none of these offered the sensitivity of the wet process, although Richard Hill Norris's variant, which was patented in 1856, enjoyed some commercial success amongst amateurs.<sup>28</sup>

By 1854 photography had established the technical parameters that it was largely to operate within for the next twenty years. There was a workable process capable of

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<sup>27</sup> *Talbot v. Laroche*, 18-20 December 1854. Talbot claimed that his calotype process was similar to the collodion process as both relied on the development of a latent image and similar chemical actions. The jury found for Laroche.

<sup>28</sup> British patent no. 2029, 1 September 1856.

producing multiple copies of an image and there was now a clear requirement for specialised equipment to facilitate its operation. Until the introduction of a reliable and commercially successful dry plate process during the 1870s, together with its acceptance and take up by professional and amateur photographers, there were no further important technical advances that impacted on the commercialisation of the wet collodion process. The changes to chemistry, optics and photographic equipment that were introduced were either small step-changes that built on previous developments or were simply dead ends. This helped define the manufacturing trade that grew up to service photographers and it defined the first period of the photographic industry: 1839-1870s.

The introduction of a workable photographic process with significant improvements over its two predecessors was a direct factor in the establishment of a commercially viable photographic manufacturing and retailing industry. Although the wet-collodion process was not perfect in a number of respects these deficiencies were of little consequence for commercial studio portraiture.

#### *Philosophical instrument makers, opticians and chemists*

The earliest photographic practitioners were not initially able to buy a camera, a lens designed for photography, or the accessories required for making a photograph. The arrival of photography in January 1839 was unheralded, but it took only a matter of a few months before commercially made apparatus was available for purchase (see page 61). For Talbot as an experimenter, and for those wanting to try out the new photographic processes based on the published descriptions, equipment had to be made as required. This was done by the individual or a local craftsman instructed by the photographer, much as the early scientists had done a century before. Their requirements were not complex: a carpenter could fashion a box into a camera and lenses could be adapted from other apparatus or be made to order. More specialised processing accessories were not strictly required. Talbot himself placed regular orders with John Gale the local carpenter in Lacock, where he was experimenting, during 1839

and continued to do so throughout 1840 and 1841 (see Illustration 3). These orders ranged from the construction and alterations of cameras, to the manufacture of camera tables and accessories for processing.<sup>29</sup> Common chemicals could be ordered from chemists, although more unusual chemicals such as hypo, were less readily available. Other early photographers would have adopted the same methods.

By the early nineteenth century there was some specialisation between different makers of scientific instruments. The first companies making and selling equipment and materials for photography were established as philosophical instrument makers and opticians - what might loosely be grouped together under the heading scientific instrument makers, and as chemists. Both had an affinity with photography which was initially perceived as a scientific curiosity by the popular press and scientific community rather than the commercial and artistic application it would quickly become. Instrument makers and opticians were both experienced in woodworking and brass work and no complex machinery was required to manufacture a camera and associated accessories. The optical requirements were easily within the capabilities of a competent optician or could be ordered in. Two early examples of manufacturers from the very early 1840s include the optician Andrew Ross and the philosophical instrument maker Edward Palmer, both of whom had been in business for around ten years (see Illustration 4).<sup>30</sup>

In addition to the philosophical instrument makers and opticians, the third group of existing manufacturers able to turn their attention to photography were the chemists. The supply of chemicals for industry and commerce had grown from the apothecary trade and by the early nineteenth century was distinct from those supplying medicinal compounds. There was frequently an overlap with philosophical instrument makers who would often supply chemicals as part of their retail activities but, for the most part, the

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<sup>29</sup> Account book of John Gale, Lacock carpenter, held by Wiltshire and Swindon Archives (2198/2). I am grateful to Professor Roger Taylor for making me aware of this source.



chemical manufacturers and chemists operated a distinct trade. The chemicals required by both the daguerreotype and calotype processes were readily supplied, although there were often issues with the quality.

Company	Location	Area of business
Edward Palmer	London	Philosophical instrument maker
Andrew Ross	London	Optician
Joseph Solomon	London	Optician, chemist and retailer
John Charles Dennis <sup>31</sup>	London	Optician and instrument maker

Table 1. Companies known to have been active as photographic manufacturers in the period 1839-c1855. *Source: Trade directories, advertisements and catalogues.*

In common with many small businesses during the 1840s and 1850s these companies were largely sole traders or partnerships employing just the proprietor or a few skilled workers and apprentices. They required little capital and photography was easily incorporated into their existing business. The absence of data makes it difficult to distinguish between manufacturers and those simply retailing photographic goods made by others but Table 1 shows selected companies known to have been active in British photographic manufacturing during the early period along with their main area of business. They generally combined their manufacturing activities with their retail premises and it was only later on that larger firms separated the two.

All these firms could satisfy the demand for photographic equipment from scientists and those curious about the new processes. For Talbot's process equipment requirements

<sup>30</sup> The best source on British scientific instrument makers is Gloria Clifton, *Directory of British scientific instrument makers 1550-1851*, London: Zwemmer with the National Maritime Museum, 1995. Andrew Ross was established as an optician specialising in microscope lenses in London in 1830. Edward Palmer was working from 1828-1845 as an instrument maker and the business was taken over by Home, Thornthwaite and Wood in 1845.

<sup>31</sup> Dennis worked at 118 Bishopsgate Street Within, London between 1839 and 1849 and later made George S. Cundell's 'much improved' calotype camera. I am grateful to Colin Harding at the National Media Museum for drawing my attention to this. Dennis is recorded in Clifton's *Directory* as working between 1837 and 1866.

were minimal. A simple light-tight box with a lens and a door on to which sensitised paper could be fixed was all that was needed. Like Talbot, many of these early practitioners would have constructed such a box for themselves or had it made for them. At its simplest the process was simply used for reproducing inanimate objects such as lace and leaves and the earliest commercially made sets of apparatus was advertised by April 1839 by Ackermann and Company of the Strand, London. It issued a booklet describing its photogenic drawing apparatus, that was used for preparing contact prints of objects such as leaves or lace placed on the paper, which was offered for sale.<sup>32</sup> It consisted of packaged chemicals, a drawing-frame and sensitised paper, and was also available separately and was described in *The Athenaeum*:

For copying by means of the sun, containing the various requisites and instructions for carrying out this most important and useful discovery; particularly recommended to botanists, entomologists, and the scientific, sufficiently clear to enable ladies to practice this pleasing art. Price per box, 21s. N.b. The prepared paper may be had separately, 2s per packet<sup>33</sup>

Soon after this Nathaniel Whittock, a draughtsman and engineer, published his own guide to the photogenic drawing process. He noted that the only apparatus required for 'drawing leaves, feathers, lace or any subject that will lie flat upon the paper' was 'a piece of plate glass, about six inches wide and eight inches in length'. For drawings of other subjects such as buildings or trees a camera obscura was required, Whittock stated that 'it would be superfluous to describe the cameras, as it has now become a toy that may be purchased in any town in England'.<sup>34</sup>

The daguerreotype process, which was more complex in its operation and was worked

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<sup>32</sup> 'Ackermann's photogenic drawing apparatus', London: Ackermann and Co., 1839. The only known copy is held in the Royal Photographic Society library at the National Media Museum, Bradford. More information on Ackermann as a supplier of artists' materials is given at [http://www.npg.org.uk/live/artistsupp\\_a.asp](http://www.npg.org.uk/live/artistsupp_a.asp) (accessed 11 September 2008).

<sup>33</sup> *The Athenaeum*, 6 April 1839. The apparatus was also advertised in *The Art-Union*, April 1839, p.53, and May 1839, p.77.

<sup>34</sup> N. Whittock, *Photogenic drawing made easy. A manual of photography*, London: Joseph Robins, [c1840]. Gernsheim records only one copy known of this publication in the Science Museum library. Two further copies have been located and inspected at the British Library, classmarks: C194.a.1. (1-6) and C112.e8.

more effectively with purpose-built accessories for processing, was better supported. Daguerre had made arrangements with a Parisian fancy stationer, Alphonse Giroux, to produce the equipment required to operate the process with a monopoly for the manufacture and sale of the official apparatus in France and elsewhere, except England.<sup>35</sup> The first manual, published by Giroux and describing the equipment and process, was available in Paris around the 21 August 1839 and an English edition appeared the following month.<sup>36</sup> The Giroux camera consisted of two wood boxes, the rear one sliding within the larger front one - mounted on a wood base. The total size was 12 3/8 x 15 1/8 x 20 3/16 inches (see Illustration 5). A lens was mounted at one end and a viewing screen at the other. Other designs of camera from the two instrument makers Charles Chevalier and N. P. Lerebours, followed in 1840 and were, again, exported to Britain.

The optician and lens maker Andrew Ross was a regular correspondent of Talbot and procured for him two daguerreotype cameras with lenses from Alphonse Giroux et Cie in October 1839 at a total cost of 310 francs.<sup>37</sup> This request suggests that there was no British firm able to manufacture something similar. Talbot recommended Ross's services to a correspondent, the naturalist Walter Trevelyan, in April 1841 and observed: 'I think the best camera is Daguerre's construction if you like to import one from Paris, you can commission Ross, optician Regent S<sup>t</sup> London to get a good one. He got some for me.'<sup>38</sup> Between late 1839 and 1841 the importation of daguerreotype apparatus in to Britain appears to have been the norm, which suggests that the market was too small for British manufacturers to commit fully to manufacture them commercially themselves. Egerton, in his introduction to the English translation of

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<sup>35</sup> Helmut and Alison Gernsheim, *L. J. M. Daguerre*, London: Secker & Warburg, 1956, pp. 94-95.

<sup>36</sup> A chronology of the manuals is given in Beaumont Newhall, *An historical and descriptive account of the various processes of the daguerreotype and the diorama by Daguerre and with an introduction by Beaumont Newhall*, New York: Winter House Ltd, 1971, pp. 267-277.

<sup>37</sup> <http://foxtalbot.dmu.ac.uk/> (accessed 12 September 2009). The correspondence of William Henry Fox Talbot, document numbers 5248 and 3967.

<sup>38</sup> <http://foxtalbot.dmu.ac.uk/> (accessed 12 September 2009). The correspondence of William Henry Fox Talbot, document number 4239.

Lerebour's *Treatise on photography* of 1843, assured students 'they will have the advantage of the best constructed apparatus and chemicals, as sent direct from Mr. Lerebours' establishment in Paris'.<sup>39</sup> John Werge recorded in his memoirs about his career in photography that 'the importation of this first photographic lens, camera, &c., into England' by Sir Hussey Vivian in 1840 came from Paris and that a Wolcott camera, used in Beard's studio, was imported from the United States.<sup>40</sup> The materials needed to operate the process were also imported although supplies could have been sourced in Britain from chemists. Silvered copper plates for the process were advertised from mid-September 1839.<sup>41</sup>

From 1841 commercial portrait photography became viable after improvements to the daguerreotype process created a wider demand for apparatus and materials from commercial photographers. The owner of Daguerre's patent, Richard Beard, bought out the rights to Wolcott and Johnson's improved daguerreotype camera and supplied his licensees with daguerreotype equipment and materials, some of which he probably had made locally in London. The Wolcott camera achieved little popularity and any demand was wholly met by them being imported as Werge had suggested (see Illustration 6).<sup>42</sup>

The silvered copper plates which were used by the daguerreotype process came from two main sources. Some were initially imported from France but there was also a local source, G. R. & H. Elkington and Company of Birmingham. George Elkington had patented the first commercially successful electro-plating process and from 1840 manufactured electro-plated goods. Plates for the daguerreotype process required

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<sup>39</sup> N. P. Lerebours, *A treatise on photography*, London: Longman, Brown, Green, and Longmans, 1843, p. viii.

<sup>40</sup> John Werge, *The evolution of photography*, London: Piper and Carter, 1890, pp. 28, 29. Werge's recollections are at odds with Talbot's importation of two daguerreotype cameras late the previous year. Werge is most likely referring to Henry Hussey Vivian (1821-1894).

<sup>41</sup> *The Athenaeum*, 14 September 1839, advertisement. Daguerreotypes and plates were advertised by a London chemist, Robinson.

<sup>42</sup> British patent number 9292, 10 March 1842, to Alexander Simon Walcott [sic] and John Johnson. See Chapter 3 note 87.

silvered copper plates and electro-plating was ideally suited for preparing these.<sup>43</sup> The Elkington company supplied plates to Richard Beard's daguerreotype studio at the Polytechnic Institution in London although it seems likely that another Birmingham electro-plater, Thomas Wharton, who also supplied the cases for presenting daguerreotypes in, took over their supply.<sup>44</sup>

The introduction of Talbot's calotype process in February 1841, which superseded his photogenic drawing process, stimulated amateur demand for photographic apparatus. The basic apparatus for the calotype was almost identical to that for the daguerreotype with minor differences required in the holder for the sensitised material. The calotype process could be operated without purpose-made accessories, although manufacturers offered such equipment.

Paper suitable for the photographic negative of the calotype process was widely available. Hardwich in his manual of photographic chemistry of 1859 noted that: 'the English papers sized with Gelatine are commonly used for the Calotype process...with a foreign starch-based paper...the solutions sink in too deeply, and the picture is wanting in clearness and definition'.<sup>45</sup> This statement was contradicted by most other writers who described the French Rives and German Saxe papers as being superior to the British papers, unless they were chemically pure.<sup>46</sup> The same statements applied to paper for printing on and there was a strong movement to establish a British manufacturer of photographic papers that was able to compete with the those on continental Europe, but this came to nothing.

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<sup>43</sup> Talbot and others noted that there were problems with electro-plated daguerreotype plates and often only French plates which were produced by rolling worked for the process. I am grateful to Dr Kelley Wilder for drawing this to my attention.

<sup>44</sup> R. Derek Wood, 'Daguerreotype case backs: Wharton's design of 1841', *History of Photography*, 4 (3), July 1980, pp. 251-252.

<sup>45</sup> T. Frederick Hardwich, *A manual of photographic chemistry*, fifth edition, London: John Churchill, 1859, p. 185.

<sup>46</sup> C. T. Sutton, 'Photographic papers', *British Journal of Photography*, no. 2018, vol. 46, 6 January 1899, pp. 10-11.

The optician Andrew Ross was amongst the earliest manufacturers of photographic equipment producing apparatus from 1840. He did not restrict himself to photographic lenses as he had a woodworking workshop alongside his optical manufacturing facilities with the capability to manufacture cameras, on to which he fitted his own lenses. John Egerton's catalogue of 1843, in addition to apparatus imported from France, also listed two sizes of Claudet daguerreotype cameras and accessories, which were probably made in London, alongside a range of chemicals.<sup>47</sup> The example of Edward Palmer typifies the way in which philosophical instrument makers became involved with photographic manufacturing and retailing adding it to an existing business which continued. Palmer was established in 1828 as an instrument maker and chemist in Newgate Street, London, and by July 1843 he was offering a range of cameras and accessories 'manufactured and sold' by himself. A surviving list describes three sizes of 'photographic camera' and a 'daguerreotype camera' together with chemicals suitable for both the calotype and daguerreotype processes, and photogenic paper.<sup>48</sup> Alfred Taylor in his *On the art of photogenic drawing* of 1845 recommended that readers could procure the chemicals needed to operate the process at Palmer's or at Dymond's - another chemist located at 146, Holborn Bars, London.<sup>49</sup>

Palmer's business continued until 1845 when it was taken over by Horne, Thornthwaite and Wood.<sup>50</sup> The new firm continued its involvement with photographic manufacturing and retailing through the personal interest and involvement of each of its three principals: Fallon Horne, William H. Thornthwaite and Edward G. Wood. The former two started in partnership in 1841 as philosophical instrument makers and had offered

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<sup>47</sup> 'Prices of the daguerreotype apparatus constructed by N. P. Lerebours...' in N. P. Lerebours, *A treatise on photography*, London: Longman, Brown, Green, and Longmans, 1843, pp. 203-207.

<sup>48</sup> 'Photographic apparatus, chemicals, &c.' in W. H. Thornthwaite, *Photographic manipulation*, second edition, London: Edward Palmer, July 1843. The first edition had appeared in June 1843.

<sup>49</sup> Alfred S. Taylor, *On the art of photogenic drawing*, London: Jeffery, 1845, n.p.

<sup>50</sup> Gloria Clifton, *Directory of British scientific instrument makers 1550-1851*, London: Zwemmer with the National Maritime Museum, 1995, p. 207. Clifton notes that Palmer had Thomas Willats as an apprentice in 1832. T. and R. Willats was also an early manufacturer of photographic equipment.

Cundell's calotype camera for sale from 1844.<sup>51</sup> Thornthwaite was a photographer and author and Horne an accomplished calotypist. These were joined by Wood who was a manufacturer of scientific instruments with a particular interest in optical projection.<sup>52</sup> By 1847 the firm was developing its own products and had registered a design for a portable case for holding photographic plates and sheets of paper.<sup>53</sup> The firm continued with an active involvement in photography into the 1860s.

Edward M. Clarke of 428 Strand, London, was another philosophical instrument maker known to have been selling photographic equipment by 1843. His catalogue of mathematical and other apparatus included two pages of photographic equipment including Claudet's patent 'camera obscura' for making daguerreotypes, although it is unclear how much Clarke was making rather than simply retailing.<sup>54</sup> Watkins and Hill of Charing Cross, London, which was in business from 1819 to 1856, and for whom Clarke had worked, also made and retailed photographic equipment.

From the 1840s to 1914 photographic equipment relied on readily available raw materials and as such there was no constraint on manufacturing from any limitation on their supply. The British preference throughout the century was for mahogany although cameras were occasionally made in other woods if required. In Europe and the United States walnut and pine were preferred reflecting local taste and availability. Brass was readily available as was the cloth and leather used for camera bellows and body coverings. New materials offering specific benefits would be incorporated into equipment, for example, the introduction of aluminium into camera production in the

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<sup>51</sup> The camera was first described in Geo. S. Cundell, 'On the practice of the calotype process of photography', *Philosophical Magazine, Series III*, 24, 160 (May 1844), pp. 321-332.

<sup>52</sup> See: Michael Pritchard 'Horne, Thornthwaite, and Wood' in John Hannavy (ed.), *Encyclopedia of nineteenth century photography*, New York: Routledge, 2008, p. 715.

<sup>53</sup> The National Archives, Kew. Design Registration no. 939, 29 January 1847.

<sup>54</sup> Edward M. Clarke, *List of prices of mathematical, philosophical, optical, and chemical instruments and apparatus manufactured by Edward M. Clarke*, London: Edward M. Clarke, 1843, pp. 36-37. The two pages list twenty-four photographic items from Claudet's patent camera obscura at £18 18 0, Voigtländer and Chevalier lenses, accessories, Whatman's paper for Talbot's process, daguerreotype plates, Ackermann's photogenic drawing apparatus and chemicals.

1880s. This reflected the development of the Hall-Hérout process of producing aluminium on an industrial scale from 1886. Within a period of three years this had reduced in price to a level only a little more expensive than brass. Aluminium and its alloys could replace brass for camera fittings and offered the advantage of considerable savings in weight, although it was more costly and it remained at a premium throughout this period.

The raw material for most photographic optics manufactured in Britain came from the company Chance Brothers of Birmingham. It produced both flint and crown optical glass, which the *British Journal of Photography* reported 'is universally acknowledged to be the finest in the world'.<sup>55</sup> The firm also made sheet glass, also called patent plate glass, which was used for photographic plates. Chance Brothers was producing optical glass from 1848 and the leading manufacturing opticians in Britain chose this to produce their own lenses for photography.<sup>56</sup> A number of other firms were also involved.<sup>57</sup>

### Chemicals for photography

Although the chemistry of photography was complex, the practical manipulation required to make a calotype or wet-collodion negative was not particularly difficult, although proficiency required experience and dexterity. Most of the chemicals required

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<sup>55</sup> 'Notes of a visit to Birmingham'. *British Journal of Photography*, no. 281, vol. 12, 22 September 1865, p. 488-489. Chance Brothers began the manufacture of optical glass in 1848 ending in 1981. It produced a range of flat glass, optical glass, rolled-plate glass, blown glass and pressed glass and had been contracted to glaze the 1851 Great Exhibition. It exhibited a disk of homogeneous dense flint glass 29 inches in diameter and 2¼ inches thick.

<sup>56</sup> Moritz von Rohr, 'Contributions to the history of English opticians in the first half of the nineteenth century (with special reference to spectacle history)', *Transactions of the Optical Society*, no. 3, vol. 28 (1926-27), pp. 139-140.

<sup>57</sup> See: T. C. Barker, *The Glassmakers: Pilkington: the rise of an international company 1826-1976*, London: Weidenfeld and Nicolson, 1977 and G. L'E. Turner, 'The government and the English optical glass industry 1650-1850', *Annals of Science*, 57 (2000), pp. 399-414.



for photography were to be found with any chemist.<sup>58</sup> Some, such as hyposulphite of soda, or hypo, which was mainly made around Newcastle-on-Tyne, probably at Mawson's works, were more difficult to find.<sup>59</sup> For many amateurs, and certainly for the professional photographer, the acquisition of chemicals and the making up of formulae was part of the standard practice of photography. Although some pre-prepared plates and chemicals had become increasingly available from the early 1860s the view expressed well into the 1890s in the photographic press was that any serious amateur needed to understand and make up his own developing solutions if he was to be considered a 'proper' photographer.

There is little contemporary insight into the sources of photography's raw materials. At the announcement of photography in 1839 there were a number of established chemist firms that were able to directly supply photographers and the companies that serviced them. Chemists and those companies re-selling chemicals under their own name were all keen to keep their sources of supply discrete. Simpson, Maule and Nicolson in 1860 advertised in *Photographic Notes* that they were 'the largest manufacturers of pure photographic chemicals' with 'the trade and shippers supplied on the best terms'.<sup>60</sup> The firm had its main manufacturing plant at the Atlas Chemical Works, Walworth, and its principal business was as a leading supplier of dyes. Photographic chemicals were only a small part of its output.<sup>61</sup> The firm also manufactured to formulae prepared by others and in 1861, when it withdrew from retail sales, Burfield and Rouch was able to advertise: 'in consequence of Messrs. Simpson, Maule and Nicolson having given up their retail business, Messrs. Burfield and Rouch have become agents for Sutton's Alcoholic Collodion' and they almost certainly made the collodion on their own premises.<sup>62</sup>

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<sup>58</sup> In this context the word chemist is used in its early to mid-nineteenth century sense as a supplier of chemicals rather than as a supplier of pharmaceuticals and medicines.

<sup>59</sup> See: Thomas Sutton, *Dictionary of photography*, London: Sampson Low, Son, and Co., 1858, p. 224.

<sup>60</sup> Advertisement, *Photographic Notes*, no. 93 vol. 5, 15 February 1860, *n.p.*

<sup>61</sup> For a history of the chemical industry see: Colin A. Russell, *Chemistry, Society and Environment. A new history of the British chemical industry*, Cambridge: Royal Society of Chemistry, 1999.

<sup>62</sup> Advertisement, *Photographic Notes*, no. 117, vol. 6, 15 February 1861, *n.p.*

Other established chemists also supplied the photographic market including Thomas Morson and Son. This company's advertisement stated: 'Photographic chemicals... These preparations are supplied to photographers and wholesale and retail dealers'.<sup>63</sup> The Morson company was a general chemist specialising in the manufacture and sale of vegetable alkaloids, and from 1821 had been the first British producer of quinine sulphate and morphine. As with instrument makers, photography offered another market that it could easily supply.<sup>64</sup> William Bailey and Son, again a general chemist, advertised as being 'manufacturing photographic chemists'. Based at Horseley Field Chemical Works, Wolverhampton, the firm won a prize for pure chemicals at the 1862 International Exhibition and had wide-ranging interests in general chemical manufacturing. It was also 'sole agents and manufacturers of Mr Sutton's collodions and his other photographic preparations' (see Illustration 7).<sup>65</sup>

One of the largest general chemical manufacturers for photography throughout the nineteenth century was Mawson and Swan of Newcastle. John Mawson established the firm after serving an apprenticeship with a chemist in Penrith before moving to Newcastle in 1840. He began manufacturing sensitised collodion in 1851 and was joined in business by Joseph Swan. The firm rapidly expanded to become a major supplier of sensitised materials and chemicals.<sup>66</sup> In Scotland, one of the main suppliers was the firm of Kemp and Company, which had been established since 1822 as a philosophical instrument maker and chemist. By the time the business was being offered

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<sup>63</sup> Advertisement, *British Journal of Photography*, no. 189, vol. 10, 1 May 1863, p. xii.

<sup>64</sup> Anthony Morson, *Operative Chymist*, Amsterdam: Clio Medica, 1997. The Morson archives are held at the Wellcome Library, London, reference SA/MOR.

<sup>65</sup> Advertisement, *British Journal of Photography*, no. 204, vol. 10, 15 December 1863, p. vi. Wolverhampton Archives and Local Studies hold a small number of papers relating to the firm, reference: DX-814.

<sup>66</sup> 'The late Mr John Mawson', *British Journal of Photography*, no. 399, vol. 14, 27 December 1867, p. 618.

for sale in 1870 it had 'a large and respectable wholesale trade with photographers and others throughout Scotland'.<sup>67</sup>

Other chemicals required for photography could also be supplied by general chemists and chemical manufacturers. The Mersey Chemical Company of Liverpool advertised itself as 'manufacturers of hyposulphite of soda' although as with most chemical manufacturers, this represented only a small part of their overall business.<sup>68</sup>

The introduction of ready-made developers, mainly for the amateur, from the late 1880s gave retailers a new product to sell. It is not clear whether these developers were made up for retailers or whether they were preparing them from the base chemicals to a formula. Marion and Company, which was the agent for Eikonogen, began advertising it from 1889 and probably made it up in its own factory. Eikonogen had been patented by Dr. Andresen of Berlin in Britain in 1889 and it rapidly became a popular developing agent amongst amateurs.<sup>69</sup> Smaller retailers and those without their own laboratory bought-in supplies from wholesalers, or directly from the manufacturer or via an agent.

As technical developments within photography were introduced so new chemicals and substances gained in importance. The properties of magnesium for illumination began to be appreciated in the early 1860s as faster emulsions made flash, or more precisely artificially illuminated, photography a possibility.<sup>70</sup> That, coupled with significantly improved methods of manufacturing magnesium wire, led to the photographic retailer Joseph Solomon of London advertising magnesium wire at 1s per yard in April 1864.<sup>71</sup>

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<sup>67</sup> Advertisement, *British Journal of Photography*, no. 520, vol. 17, 22 April 1870, p. iii.

<sup>68</sup> Advertisement, *British Journal of Photography*, no. 905, vol. 24, 14 September 1877, p. i.

<sup>69</sup> Eikonogen was the subject of British patent number 5207 of 26 March 1889. Dr Momme Andresen (1857-1951) was a chemist employed by the German firm Aktien-Gesellschaft für Anilin-Fabrikation (Agfa) and Eikonogen was the company's first photographic product. He was employed by Agfa between 1887 and 1911 and thereafter as a scientific collaborator, see J. M. Eder, *The history of photography*, New York: Columbia, 1945, pp. 434-435.

<sup>70</sup> A. S. Darling, 'Non-ferrous metals' in Ian McNeill, *An encyclopaedia of the history of technology*, London: Routledge, 1990, pp. 113-114.

<sup>71</sup> Advertisement, *British Journal of Photography*, no. 212, vol. 11, 25 April 1864, p. xii.

Solomon's optimism in his supply was misplaced and in June he was having to refund money and cancel orders 'as the Manufacturers having failed so often in their promises to deliver just a few ounces, J.S. doubts whether the Makers can produce it to the price they pretend to deliver it'.<sup>72</sup> Manufacturing difficulties were eventually overcome and by the 1890s magnesium wire was being widely used in portrait studios and by amateurs.

#### *The supply of silver nitrate*

Of all the basic chemicals for photography silver nitrate, also known as lunar caustic, was the one which most preoccupied both the professional and amateur photographer. The purity of the compound was the over-riding concern as the adulterated chemical was, in the words of Thomas Sutton 'one of the greatest evils with which the photographer has to contend'.<sup>73</sup> Price was often a secondary consideration.

Some of the largest studios and sensitised goods manufacturers that used large quantities produced their own silver nitrate by dissolving pure silver in nitric acid and refining this. Most photographers, however, were content to purchase it pre-prepared. The *British Journal of Photography* described 'Johnson and Matthey' of Hatton Garden in 1861 as 'probably the largest manufacturers of silver nitrate in England' and noted that 'most of the leading firms' got their supply from them.<sup>74</sup> Johnson, Matthey and Company, and John Johnson and Sons were two distinct companies with antecedents from the same family. Both were involved in the supply of raw chemicals to the photographic trade with John Grove Johnson of the latter firm introducing silver nitrate for photography into the firm's business, although it is likely that the firm had been supplying chemicals for use in photography as early as 1839.<sup>75</sup>

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<sup>72</sup> Advertisement, *British Journal of Photography*, no. 215, vol. 11, 1 June 1864, p. xiv.

<sup>73</sup> Thomas Sutton, *Dictionary of photography*, London: Sampson Low, Son, and Co., 1858, pp. 302-303.

<sup>74</sup> *British Journal of Photography*, no. 122, vol. 6, 1 May 1861, p. 127.

<sup>75</sup> Donald McDonald, *The Johnsons of Maiden Lane*, London: Martins Publishers, 1964, pp. 121-125.

Johnson, Matthey and Company's role as a manufacturer of silver nitrate may not have been all it seemed or, more likely, had changed as demand had grown. In the mid-1890s Fuerst Brothers, by then itself a major supplier of photographic chemicals, and clearly referring to Johnson, Matthey and Company, stated:

the nitrate of silver we supply is manufactured from pure silver, by one of the largest, if not the largest, London refineries viz., The Wood Street Smelting Works, in absolutely pure and uniform quality, as supplied to the trade for the last twenty-five years, and, until about a fortnight ago, through a firm of manufacturing chemists generally credited with having been the manufacturers of it<sup>76</sup>

Fuerst further stated that their silver nitrate: 'will henceforth be known under its proper trade mark (a pair of scales, with the initials 'W.R.')...' Fuerst Brothers made arrangements to be supplied exclusively with silver nitrate from the Wood Street Works: 'in this way manufacturers of photographic plates, papers, &c., and users of nitrate of silver generally will be able to obtain a perfectly pure and uniform quality at the lowest market price, based on the value of the best silver'.<sup>77</sup> The following year they also appointed T. Donald Watson, who had been with Johnson and Sons of Cross Street for over thirty years, as manager of their photographic department where 'he will devote special attention to nitrate of silver, chloride of gold, developers, and all other photographic chemicals'.<sup>78</sup>

Price was a concern for some photographers. The *British Journal of Photography* noted in 1861 that 'there is a difficulty in getting pure nitrate of silver from respectable firms' and recommended Bayley and Company, of Lawrence Pountney Lane, London, which had 'lately undertaken to recrystallize nitrate of silver for us, and supply it in glass tubes, hermetically [sic] sealed, each containing 1 ounce, price five shillings'.<sup>79</sup>

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<sup>76</sup> 'News and Notes', *British Journal of Photography*, no. 1782, vol. 41, 29 June 1894, p. 412.

<sup>77</sup> 'News and Notes', *British Journal of Photography*, no. 1780, vol. 41, 15 June 1894, p. 379.

<sup>78</sup> 'News and Notes', *British Journal of Photography*, no. 1862, vol. 43, 10 January 1896, p. 30.

<sup>79</sup> *British Journal of Photography*, no. 137, vol. 6, 15 December 1861, p. 348.

As silver was a key component of photography, price was a regular topic within the photographic press. The *British Journal of Photography* noted in 1876: 'The price of metallic silver is still a subject of grave importance. Photographers...grumble because while the metal has come down twenty-five per cent. the salt [silver nitrate] has dropped only about two and a-half per cent.'<sup>80</sup> The relationship between the price of silver and silver nitrate was revisited again in 1885 when there had been grumblings that price reductions had not been forthcoming from sensitised goods manufacturers:

the price of silver in the market is now very low indeed...Some of the houses, we are informed, have lowered the price of their nitrate by twopence per ounce for quantities...Perhaps some of the dry-plate makers may now be induced to give us a somewhat thicker coating of emulsion.<sup>81</sup>

However, the relationship between silver nitrate and photographic practice had become largely removed from the amateur and professional photographer's direct experience by the 1890s when most photographers, both professional and amateur, were buying prepared plates or films. It was of greater concern to the manufacturers of these products as silver remained a key raw material in their manufacturing process:

Photographers are less directly interested in the value of silver now than they were formerly when the nitrate was required for baths in the collodion process and for sensitising paper. Now the silver nitrate is rarely required, if at all, by many photographers. Still, the market value of the metal largely concerns dry-plate makers and those who supply ready-sensitised paper. Silver has been depreciating in value for many years past, and the announcement of the lowest record has often been made. The record has, however, again been broke, for a fortnight ago it was quoted at 29½ d. per ounce. About five-and-twenty years ago it stood at something over 60d. per ounce.<sup>82</sup>

For the many small-scale manufacturers of sensitised paper the price of silver had a direct and often immediate impact on their prices. Otto Schölzig was forced to raise the price of his papers by ten shillings per ream in 1890 due to increases in the price of silver nitrate. Although less widely used than silver the price of other expensive metals

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<sup>80</sup> 'Scientific Jottings', *British Journal of Photography*, no. 849, vol. 23, 11 August 1876, p. 379.

<sup>81</sup> *British Journal of Photography*, no. 1321, vol. 32, 28 August 1885, p. 550.

<sup>82</sup> 'The silver market', *British Journal of Photography*, no. 1732, vol. 40, 14 July 1893, p. 435.

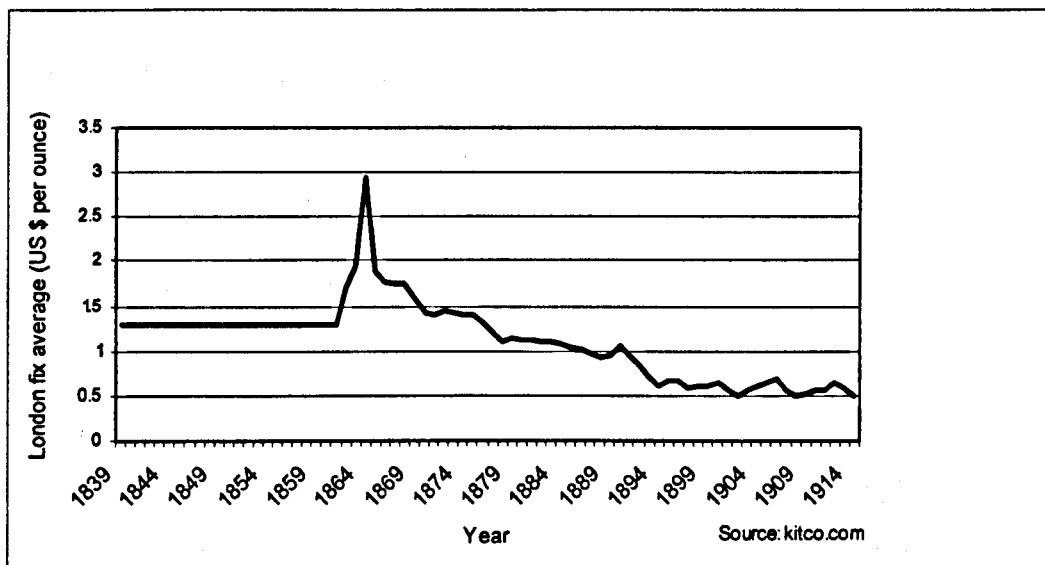


Figure 3. The price of silver 1839-1914. Source: kitco.com.

used in photography also influenced the retail price of materials made with them. Schölzig also retailed Dr Jacoby's platinum papers which increased in price from 2s to 2s 6d per sheet 'owing to the high price of platinum salts'.<sup>83</sup>

Throughout the nineteenth century there was a general decline in the average price of silver as new sources of the metal were brought into production, see Figure 3. The mid-1890s in particular saw a sharp fall in the price of silver:

Photographers are not so directly interested in the silver market as they used to be when they had to sensitise their own paper and prepare their own plates by the wet-collodion process. Indeed some of the "press-the-button" type of workers seem to be almost unaware that silver plays any part in the art they espouse. ... Recently it was down to 2s 3¼ d. per ounce... it is the first time that the price has continued so long at the present quotations as it has done during the past few weeks, and with the prospect of its yet becoming lower... Nitrate of silver is now less than half the price it was only a few years ago. So much the better for the plate-makers and manufacturers of ready-sensitised papers<sup>84</sup>

This reduction in the cost of a key raw material was beneficial in helping to keep the

<sup>83</sup> 'Effect of the rise in the price of silver'. *British Journal of Photography*, no. 1581, vol. 37, 22 August 1890, p. 544.

<sup>84</sup> 'Extraordinary importation of silver', *British Journal of Photography*, no. 1818, vol. 42, 8 March 1895

price of sensitised goods down for the consumer throughout the entire period as it helped the manufacturers to keep their prices down.

## Coalescence into a new industry

### *The early market for photography*

The market that the various manufacturing and retailing firms were supplying was initially very limited. Only a few photographic portrait studios up to the mid 1850s required equipment, materials and chemicals. Those studios licensed by Richard Beard could buy apparatus, including the Wolcott camera directly from him. The Wolcott camera had been designed in America by Alexander Wolcott and John Johnson and patented in 1840 by Beard.<sup>85</sup> Johnson later stated that Beard had paid £200 for half the invention and had purchased the remaining half for £7000.<sup>86</sup> The camera was used in his studio from 1841 and any cameras that Beard sold to licensees would probably have been imported.<sup>87</sup>

London, which had by far the highest number of studios of any town or city in Britain (see Figure 4) had fewer than twenty portrait studios until 1853. It was only when the wet-collodion process was widely adopted after improvements to Archer's original process and concerns about the right to use it without payment were removed that the number of studios grew significantly. By 1859 London had nearly 180 studios. The

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<sup>85</sup> British patent number 8546, 13 June 1840.

<sup>86</sup> Johnson made the claims relating to Beard's purchase in *Photographic News*, no. 520, vol. 12, 21 August 1868, p. 404 and may have inflated the amounts involved. Wolcott was a New York scientific instrument maker.

<sup>87</sup> Personal communication from Professor John Hannavy dated 12 January 2010. Hannavy suggests that despite the shorter exposure times the Wolcott camera offered it achieved little popularity in Britain and any demand could have been met by imports rather than being made in Britain. The absence of any surviving Beard license makes the precise relationship between him and his licensees difficult to determine.



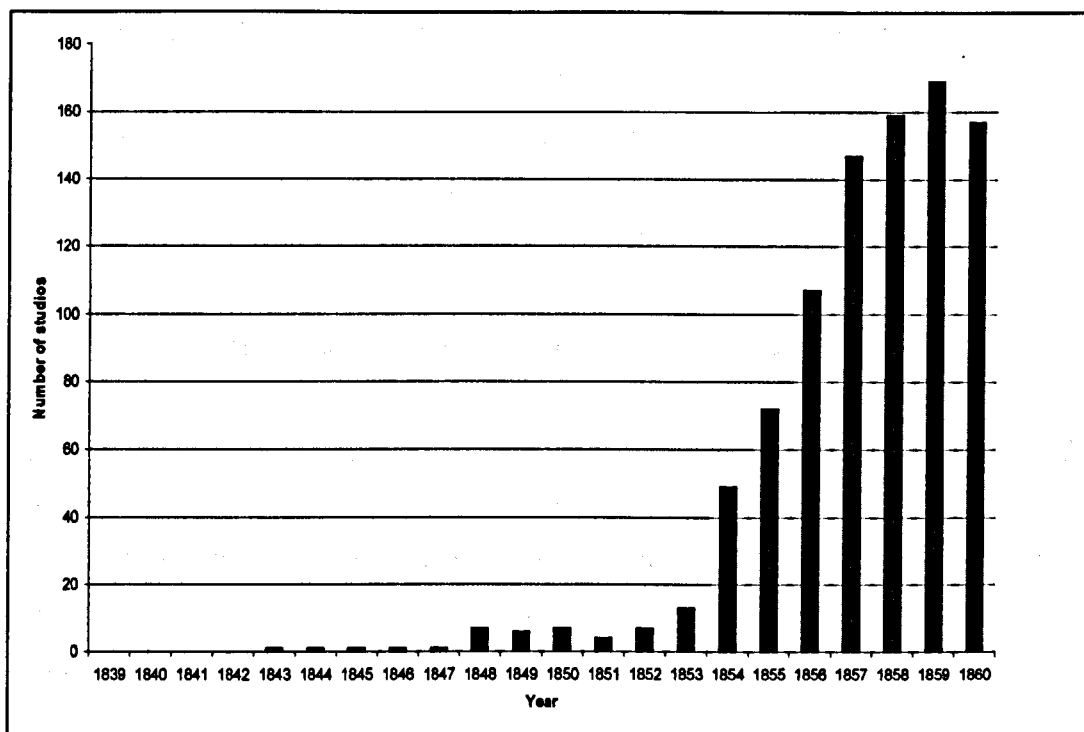


Figure 4. London photographic studios 1839-1860. *Source: Post Office London Directory.*

professional market for equipment was therefore small as once purchased cameras and accessories generally had a long working life. By 1861 there were still only 2534 photographers recorded in England and Wales.<sup>88</sup>

The number of amateur photographers entering the field is harder to quantify. John Nicol suggests that there were ‘thousands’ up to the introduction of the wet-collodion process in 1851.<sup>89</sup> Roger Taylor has identified some five hundred active calotypists in the period between 1841 and 1860. Evidence from photographic society membership lists would suggest that up to the mid-1850s there were probably fewer than one thousand amateur photographers throughout Britain at any point in time. The leading society was the Photographic Society, based in London, which had a membership of

<sup>88</sup> *Census of England and Wales 1861*. Although this may be an under-estimate it includes photographic assistants suggesting that the number of actual studios was in the low thousands in England and Wales.

<sup>89</sup> John Nicol, ‘Concerning amateurs’, *British Journal of Photography*, no. 1081 vol. 28, 21 January 21 1881, p. 32. This number seems very high and is not supported by evidence.

around 360 by the middle of 1854. This included professionals, amateurs and overseas members. As the leading photographic society and centred on London its membership was considerably in excess of any provincial society. All other British photographic societies had memberships that were numbered in tens rather than hundreds, Blackheath Photographic Society, for example, had a membership in 1857 of twenty-three.<sup>90</sup>

In the late 1840s and particularly from the early 1850s a specialised photographic manufacturing and retailing trade began to emerge from the scientific instrument makers, opticians and chemists. That is not to say that these original firms disappeared from the scene. Some such as Horne, Thornthwaite and Wood continued to manufacture and retail photographic equipment as a significant part of their wider business well into the nineteenth century and a number of companies such as Negretti and Zambra, W. F. Stanley and W. Watson and Sons joined them.

What was more important in the long term was that these firms were joined by specialist photographic companies which had photography as the main part of their business. By 1853 there was recognition for the first time by the compilers of trade directories that the photographic trade was now distinct. Photographic manufacturers were listed separately in the London Post Office directories under the heading of 'daguerreotype apparatus makers'.<sup>91</sup> In the trade directories of other cities in Britain this distinction often took much longer to occur and this reflected the far smaller numbers involved.

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<sup>90</sup> GB/NNAF/C72810, Local History and Archives Library, Greenwich. Blackheath Photographic Society minute book 1857-1861.

<sup>91</sup> *Post Office London Directory 1853*, London: Kelly and Co., p. 1312. There was a single entry for 1853 for James F. Shew at 32, Rathbone Place. The following year twelve firms were listed under two headings: 'daguerreotype apparatus makers' and 'daguerreotypists' material dealers'. In view of the time lag associated with the compilation of the directories this separation had probably been apparent for one or two years prior to 1853/54.

<b>Daguerreotype Apparatus Makers</b>	<b>Area of business</b>
Bourquin, John Peter, & Co.	French photographic importer
Gogerty, Robert	Optician, established by 1839
Hobcraft, William	Instrument Maker, established by 1817
Home, Thornthwaite and Wood	Philosophical instrument makers, established by 1845
Lichtenstein, Louis	American, photographic and toy seller
Otewill, Thomas	Camera manufacturer, established by 1851
Pottinger, Chas. Richmond	Photographer from 1852
Shew, James Fludger	Optician, established by 1831
Spicer, Lewis, H.	Instrument maker, established by 1849
<b>Daguerreotypists' Material Dealers</b>	
Bourquin, John, Peter & Co.	French photographic importer
Photographic Art Union, Thomas Sharp	Photographic studio from 1853
Solomon, Joseph	Optician, established by 1849

**Table 2. Daguerreotype apparatus manufacturers in 1854 showing their background.**  
*Source: Post Office London directory 1854.*

In London in 1854 when daguerreotype apparatus makers and dealers were being distinguished there were eleven firms listed, including one that occupied both categories. Table 2 shows the firms listed and their origins and this highlights the close relationship between scientific instrument making and photography even at this date. It also shows three firms that were solely concerned with photography and others, such as Shew and Solomon, for which photography was to become the main part of their business. Other firms are known to have been making photographic equipment but were not listed, Andrew Ross, for example, did not appear in the directory until 1863.

*The corporate structure: sole trader and partnerships*

The development of specialist photographic manufacturing and retailing businesses did not alter the general pattern of small manufacturing units associated with the scientific instrument making firms. It reflected the prevailing business structure for small firms in Britain generally and, for photography, the ease of entry into an emerging industry that required little capital to manufacture its products. The sole trader, where an individual owned and operated the business, was the smallest business entity. The firm's principal generally worked alone or with other family members, or employed a small number of

workers or apprentices.<sup>92</sup> It was particularly vulnerable to the owner's death or bankruptcy. When, for example, Thomas Ottewill was made bankrupt in 1864 the business stopped completely for a period of months. Such situations were frequently catalysts for a partner to enter into the business bringing capital or business experience. Ottewill, who was made bankrupt on several occasions during the 1860s, brought in William Morgan and a Mr Collis who had worked at the optician Andrew Ross, at different times. A partnership arrangement, which rarely went beyond three partners, offered greater protection for the business and this model was also adopted by the emerging photographic firms.

The death of a partner did not necessarily mean the end of the business. When Antoine Claudet died in 1867 the firm of Claudet and Houghton was continued by his partner, George Houghton, who did this alone until 'and son' was added to the business's name. Claudet, Houghton and Son was eventually renamed in 1874 as George Houghton and Son.<sup>93</sup> In other cases a business would be sold to a third party. Mawson and Swan of Newcastle bought the long-established collodion and photographic dealers Huggon and Company from the executors which it absorbed into its existing business.<sup>94</sup> In other cases a widow or family member might take over the business or install a manager.

The business name would sometimes be retained. After the death of William W. Rouch in 1871 the business was continued by his brother, S. W. Rouch, who retained his brother's name for trading.<sup>95</sup> In other cases a new name was adopted. James How, the manager of George Knight and Son, philosophical instrument maker, took the business over in 1864 and renamed it after himself. After How's death in 1872 the business

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<sup>92</sup> The role and importance of the family in small firms has been discussed elsewhere see, for example, M. Berg, *The age of manufactures 1700-1820: Industry, innovation and work in Britain*, London: Routledge, 1994; Pat Hudson, *The industrial revolution*, London: Arnold, 1992; and Pat Hudson, 'Financing firms, 1700-1850' in Maurice W. Kirkby and Mary B. Rose (eds.), *Business enterprise in modern Britain from the eighteenth to the twentieth century*, London: Routledge, 1994.

<sup>93</sup> *British Journal of Photography*, no. 762, vol. 21, 11 December 1874, supplement.

<sup>94</sup> Advertisement, *British Journal of Photography*, no. 1087, vol. 28, 4 March 1881, p. iii. Huggon had died in 1880.

<sup>95</sup> *British Journal of Photography*, no. 565 vol. 18, 3 March 1881, pp. 96-97.

continued under a new owner who retained the How name until the early 1890s. After Andrew Ross died in 1859 the business was divided between his son, Thomas, and son-in-law, John Henry Dallmeyer. Both worked under their own names and made frequent reference to their antecedents. Less successful businesses, or those that failed to find a buyer, would cease trading and their stock and tools sold off.

A partnership offered a more stable business structure with each partner bringing particular skills and shared responsibilities to the firm.<sup>96</sup> It also offered the potential for continuity should one partner wish to leave. When Edward George Wood left Horne and Thornthwaite in 1854 'by mutual consent' to set up business on his own account a simple notice in the *London Gazette* was all that was required.<sup>97</sup> In other cases the announcement of the departure of one partner made it clear who would be responsible for any debts. For example, when Robert Fowler left the Leeds firm of Harvey, Reynolds and Fowler in 1864 it was noted that 'all debts due and owing to or by the said late firm will be received and paid by the said Thomas Harvey and Richard Reynolds' who continued with the business.<sup>98</sup> Finding a partner with capital to enter a business could be difficult if personal contacts or an introduction failed to materialise. George Smith who owned the Sciopticon Company resorted in 1883 to advertising for a business partner:

Mr George Smith (Sciopticon Co.), 26, Colebroke Row, London, N., is seeking a Business man with Capital to assist in developing and extending his numerous specialities – portable photographic cameras and apparatus, optical lanterns, lantern slides, (Woodbury process)...<sup>99</sup>

Bringing together partners with technical and business skills was one that worked well for a number of companies in the later period. In the case of Thornton-Pickard of Manchester, Edgar Pickard brought capital and business experience to John Thornton's

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<sup>96</sup> See note 92.

<sup>97</sup> *London Gazette*, no. 21577, 1 August 1854, p. 12.

<sup>98</sup> *London Gazette*, no. 22910, 11 November 1864, p. 27. Fowler had joined Mr Harvey as an apprentice and was made a partner in the business in 1860. He retired through ill health and died in 1870.

<sup>99</sup> Advertisement, *British Journal of Photography*, no. 1214 vol. 30, 10 August 1883, p. vii.

engineering skills at its formation in 1888. At Newman and Guardia in 1891 Arthur Newman's mechanical skills were supported by Julio Guardia's business acumen and capital. In each case the non-business partner left after disagreements over the running of the business. For those firms that remained small these basic business structures continued into the early twentieth century. For those that expanded and grew new corporate models were used to facilitate this, which are discussed in Chapter 4.

### *Camera manufacturing*

Up to the mid-1850s a few standard designs of camera existed beyond the basic box form or sliding box designs (see Illustration 8). Individuals would regularly describe their own designs in the *Journal of the Photographic Society* and an arrangement might be made with a manufacturer to construct and exhibit the camera. Charles Morgan, for example, described his own design of portable camera stating that: 'Mr E. G. Wood, philosophical instrument maker, of 117, Cheapside, London, will shew and explain the camera to any who may be desirous of seeing it'. In the same issue Wood advertised the camera for sale.<sup>100</sup> Manufacturers from other trades also entered the photographic market to produce goods that were not difficult to construct. For example, a transfer box for keeping prepared stereoscopic plates designed by a Mr Hardy was advertised by Mr Hardie [sic], a 'fancy cabinet maker' of 1 Elder Street, Edinburgh.<sup>101</sup> As the total sales of such cameras and accessories at this time were small, reflecting the size of the market, much equipment was probably being made to order and one-off designs were not difficult to accommodate.

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<sup>100</sup> Correspondence from Charles Jeffrey Morgan, *Liverpool Photographic Journal*, no. 34, vol. 3, 11 October 1856, p. 147 and advertisement, *n.p.*

<sup>101</sup> 'Transfer box for keeping prepared stereoscopic plates', *Liverpool Photographic Journal*, no. 36 vol. 3, 13 December 1856, p. 167 and advertisement, *n.p.*

Date	Number	Registree	Description	Status
29 January 1847	939	Home, Thomthwaite and Wood	Camera plate holder	Photographic manufacturer
28 January 1853	3514	Philip Henry De la Motte [sic], London	Stoke's portable camera	Photographer and publisher
25 May 1853	3565	T. Ottewill	Cameras [Collapsible camera]	Photographic manufacturer
24 February 1854	3570	Frederick Scott Archer	Portable folding camera	Photographer
30 June 1854	3608	Bland and Long	Camera	Photographic and optical instrument Manufacturer
27 November 1857	3789	Arthur Melhuish	Camera part	Photographer
9 November 1857	4031	Burgess and Key	Camera plate holder	Manufacturer
9 April 1858	4075	William Rouch	Camera with processing attachment	Photographic Manufacturer
30 November 1858	4143	William Harrison Powell	Stereoscopic camera	Optician

Table 3. Camera and photographic equipment design registrations 1839-1870.

Source: *The National Archives, Design Registrations, BT46.*

Manufacturers also produced their own designs and a number of these were formally registered (and are noted in Table 3). Camera making at this time was, in the words of Samuel Highley, the work of 'photographic cabinet-makers'. Manufacturers up to the 1870s, and after in some cases, were described as consisting of 'a master, a man, three boys and a lot of glue-pots'.<sup>102</sup> Although some machinery was employed for cutting or finishing wood they were largely hand made by skilled workmen. British cameras were made from mahogany and highly polished and frequently finished with brass binding for strength and decoration. Compared with French or American cameras, which were generally less well finished, they were widely acknowledged by the photographic press as the best in the world.

A manufacturer's workshop was usually combined with a retail shop. The setting up of such a workshop was not capital intensive or difficult, except in the case of larger firms which made greater use of machinery to support their manufacturing. One of these was

<sup>102</sup> 'A modern camera factory', *The Photogram*, no. 172, vol. 15, April 1908, pp. 118-121.

Henry Francis who advertised extensively during the 1850s and 1860s noting 'all kinds of apparatus made on the premises' at 'Francis's photographic apparatus manufactory'.<sup>103</sup> When Francis retired from business in 1868 his stock and the content of his workshop were offered at auction. Aside from thirty cameras and lenses it included 'lathes, work benches, saw mills, &c. used in...manufacture' which was probably typical of a firm of its size.<sup>104</sup> Arthur Melhuish, who demonstrated his metal camera in 1859, announced the following year that he was 'establishing a factory for his patent metal cameras, but regrets to say that he will not be able for a few weeks to undertake any further orders' indicating that it did not take more than a few weeks to prepare a workshop to manufacture photographic goods.<sup>105</sup>

By 1861 there were some thirty-eight photographic apparatus makers working in London.<sup>106</sup> The anonymous author of a series of 'letters to a photographic friend' described visiting photographic manufacturers 'who have establishments out of the main thoroughfares of this "wonderful" metropolis'. Routledge, Ottewill and Hare were visited and he referred to Melhuish, Rouch and Shepherd.<sup>107</sup> These were situated off the main shopping streets but within the city and therefore were well placed to supply commercial portrait studios and visiting or resident amateurs. H. R. Nichols described himself as 'having had 23 years' experience in the manufacture of philosophical and photographic apparatus' and informed 'photographers and amateurs that all goods supplied by him are manufactured on the premises, of the best materials and

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<sup>103</sup> Advertisement, *British Journal of Photography*, no. 115, vol. 7, 2 April 1860, p. xi. Henry Francis was recorded in the *Post Office London directory* from 1858 to 1869.

<sup>104</sup> Advertisement, *British Journal of Photography*, no. 440, vol. 15, 9 October 1868, p. iii. The auction was conducted by Mr C. J. Baker on the premises.

<sup>105</sup> Advertisement, *British Journal of Photography*, no. 114, vol. 7, 15 March 1860, p. vi.

<sup>106</sup> 'Photography and photographers', *British Journal of Photography*, no. 36, vol. 14, April 18 1867, p.190. It is not entirely clear where this number is taken from as it does not correspond exactly with the 1861 census, nor with the numbers listed in the London directories. In addition to this number, photographic dealers numbered 28, chemical makers 17 and photographic artists 284.

<sup>107</sup> 'Letters to a photographic friend. No. VIII.' in *British Journal of Photography*, no. 129, vol. 7, pp. 317-318. Of these names, A. Routledge and Co. manufactured for the trade. Ottewill and Hare were well-known manufacturers. Melhuish was primarily a retailer and publisher and had designed and patented a metal camera, Rouch was a manufacturer and retailer, and Shepherd was primarily an optician and lens maker.



workmanship'.<sup>108</sup> These examples all confirm that the established model at this time was for firms to be centrally located, and manufacturing and retailing from the same premises, although they also subcontracted for other manufacturers and supplied retailers directly.

Outside London, J. Rogerson who had been a professional photographer and manufacturer of apparatus since 1851, recognised by the end of this early period the need to modernise and mechanise to a greater level if he was to remain competitive. In 1869 his Manchester Photographic Apparatus Manufactory began promoting products which 'being machine-made, ensure accuracy and quality at a low price'.<sup>109</sup> Advertisements illustrated a mechanised workshop with belt driven machines.<sup>110</sup> Mechanisation helped the economics of his business allowing more goods to be produced with the same number of workmen. It was also seen as a selling point and others also adopted the same strategy. For example, D. H. Cussons and Company, of Blackpool, proclaimed that they had 'the largest steam factory in the North of England. For cameras, camera stands, retouching desks, studio furniture, and high-class apparatus', highlighting its modernity in manufacturing.<sup>111</sup> Machines were no longer simply to ease repetitive tasks of the craftsman but were also for larger firms an integral part of the manufacturing process.

#### *The Ottewill group of camera manufacturers*

At the 1862 International Exhibition the work of 'the photographic cabinet-makers' George Hare, Patrick Meagher and Thomas Ottewill drew much attention. One reviewer, Samuel Highley, noted that their cameras 'are of the very best of English workmanship, and contrast very favourably with the productions of our foreign

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<sup>108</sup> Advertisement, *British Journal of Photography*, no. 143, vol. 8, 1 June 1861, p. xi.

<sup>109</sup> Advertisement, *British Journal of Photography*, no. 491, vol. 16, 1 October 1869, p. v.

<sup>110</sup> Advertisement, *British Journal of Photography*, no. 506, vol. 17, 14 January 1870, p. vii.

<sup>111</sup> Advertisement, *British Journal of Photography*, no. 876, vol. 24, 16 February 1877, p. iii.

neighbours'.<sup>112</sup> All three businesses were specialist camera makers with photographic manufacturing being the major part of their businesses.

Thomas Ottewill established his business as a 'photographic & philosophical apparatus' manufacturer in 1851.<sup>113</sup> He quickly achieved a strong reputation for the quality of his wood and brass work, and by the end of 1854 had supplied a double folding camera, two dark slides, plate boxes and accessories at a total cost of £49 11s 6d to H. E. Becker [sic], on behalf of the Royal Household.<sup>114</sup> Ottewill's business was located at 24 Charlotte Street, Islington, which was close to Clerkenwell, an area that contained many small manufacturing workshops, including other camera manufacturers. By 1856 he claimed to 'have erected extensive workshops adjoining their former shops, and having now the largest manufactory in England for the making of cameras, they are enabled to execute with dispatch any orders they may be favoured with'.<sup>115</sup> In 1861 his workshops were employing around twenty people.<sup>116</sup>

The firm's reputation was enhanced by cameras such as the double folding model, the design of which was registered on 25 May 1853.<sup>117</sup> A diary entry by the author Charles Dodgson who wrote under the pseudonym Lewis Carroll describes the purchase of one in 1856. Dodgson, with Reginald Southey who had taught him photography, 'went to a maker of the name of Ottewill...the camera with lens etc will come to just about £15. I ordered it to be sent to Ch[rist]. Ch[urch]. As it will not be ready in time to do anything

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<sup>112</sup> Samuel Highley, 'International Exhibition. The photographic apparatus and appliances [2]', *British Journal of Photography*, no. 177, vol. 9, 1 November 1862, pp. 413-414.

<sup>113</sup> See: Michael Pritchard 'Ottewill, Thomas, & Co.', in John Hannavy (ed.), *Encyclopedia of nineteenth century photography*, New York: Routledge, 2008, p. 1033-1034. I would argue that the order of 'photographic' and 'philosophical' is deliberate.

<sup>114</sup> PP2/8/5089, The Royal Archives, Windsor. Ernest Becker had been appointed the royal librarian and tutor in May 1851. He was an accomplished photographer and a council member of the Photographic Society.

<sup>115</sup> Advertisement, *Photographic Notes*, no. 14, vol. 1, 1 November 1856, p. 229.

<sup>116</sup> Quoted by A. D. Morrison-Low, 'Instrument making and early photography', *The PhotoHistorian*, no. 149 (January 2007), p. 30.

<sup>117</sup> The National Archives, Kew, BT46, design registration no. 3465, 25 May 1853.

this vacation.<sup>118</sup> In addition to his own designs Ottewill made cameras designed by the sculpture and photographer Frederick Scott Archer and Royal Engineer and architect Captain Fowke. He also produced a miniature camera inspired by Thomas Skaife's Pistolgraph of 1859.<sup>119</sup> Despite the firm's reputation and the expansion of the business to offer collodion and chemicals for photography, Ottewill was made bankrupt for a second time in 1864, being discharged the following year.<sup>120</sup> New capital in the form of Mr Collis who joined Ottewill from Ross in 1867 failed to help and the firm closed shortly afterwards.

At least five camera makers - J. Garland, George Hare, T. Mason, Patrick Meagher and A. Routledge - all worked for Ottewill before establishing their own businesses.<sup>121</sup> Each had entered photography directly rather than having come via scientific instrument making. Hare had served an apprenticeship as a joiner before joining Ottewill, Collis and Company, where he stayed for a short period before establishing his own business around 1857. By 1861 he was employing eight men and one boy which had expanded to twelve men and three boys by 1881.<sup>122</sup> He was initially an innovative camera designer and continued in business until circa 1908.<sup>123</sup> Meagher, similarly, started as a joiner's apprentice around 1843 before working for Ottewill and then establishing his own business by 1859. He produced good quality wood cameras and claimed in 1865 that

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<sup>118</sup> Edward Wakeling, *Lewis Carroll's Diaries. The private journals of Charles Lutwidge Dodgson* (Lewis Carroll). Volume 2 [1856], Luton: The Lewis Carroll Society, 1994, pp. 53-54.

<sup>119</sup> Scott Archer's camera was the subject of design registration no. 3570 of 24 February 1854. Fowkes's camera was granted provisional British patent no. 1295 of 31 May 1856.

<sup>120</sup> See: *The London Gazette*, 14 August 1863, p. 4076; 4 November 1864, p. 5244; 2 December 1864, p. 6429; 3 March 1864, p. 1362.

<sup>121</sup> Advertisement, *British Journal of Photography*, no. 169, vol. 9, 1 July 1862, p. v. In this advertisement Routledge describes himself as 'from T. Ottewill & Co.'; Advertisement, *British Journal of Photography*, no. 187, vol. 10, 1 April 1863, p. iii. Garland describes himself as 'late foreman to T. Ottewill' and in 1871 claimed to have been established fifteen years, i.e. since 1856. Advertisement, *British Journal of Photography*, no. 596, vol. 18, 6 October 1871, p. iii. Mason described himself as 'formerly with Ottewill'.

<sup>122</sup> Census of England and Wales 1861 (RG9/15) and Census of England and Wales 1881 (RG11/195).

<sup>123</sup> See: Michael Pritchard 'Hare, George (1825-1913)', in John Hannavy, *Encyclopedia of nineteenth century photography*, New York: Routledge, 2008, pp. 633-634.

'thousands of my cameras [are in] the hands of photographers'.<sup>124</sup> Meagher remained in business until the late 1890s.

Taken collectively these represent a significant group of early British camera makers. Looking back, the *British Journal of Photographic Almanac* in 1898 noted that Ottewill 'may be regarded as the source to which the best school of English camera-making traces its origin'.<sup>125</sup> Ottewill and his contemporaries represented the traditional form of hand-made camera construction, producing high quality products in limited quantities (see Illustration 9). Despite the long careers of Hare and Meagher they failed to make their later products innovative or improve their manufacturing methods beyond simple workshop machines. The cameras they were producing at the end of their careers were almost identical to those with which they had started, a situation many other manufacturers replicated.

#### *Sensitised materials and collodion*

The provision of ready-prepared sensitised materials commenced soon after photography was announced. As described earlier, by April 1839 Ackermann and Company was offering sensitised paper for making photogenic drawings at 2s. per packet and Edward Palmer in 1843 was offering iodized and photogenic papers at 1s and 2s 6d per packet.<sup>126</sup> For the daguerreotype and calotype processes the preparation of sensitised materials had to be undertaken by the photographer and for the commercial photographer it was part of their training. Between the 1840s and 1890s there was a general move by photographers from preparing their own sensitised materials to buying them already prepared as a consequence of changes in photographic chemistry and their commercialisation. In the case of papers for printing photographs this move was gradual, but the shifts from daguerreotype to wet collodion and from wet collodion to

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<sup>124</sup> Correspondence from P. Meagher, *British Journal of Photography*, no. 280, vol. 12, 15 September 1865, p. 480.

<sup>125</sup> 'Obituary. P. Meagher', *British Journal of Photographic Almanac 1898*, London: Henry Greenwood & Co., 1898, p. 640.

<sup>126</sup> Edward Palmer, *Photographic manipulation*, London: Edward Palmer, 1843, p 48.

dry plates were much more rapid. By the 1890s the preparation of films and plates and papers had become too complex, the quality of manufactured products was generally assured and there was little financial incentive for a photographer, commercial or amateur, to do so.

The arrival of the wet collodion process and subsequent improvements from 1851 introduced a more sensitive photographic process. At its core was collodion which was a solution of pyroxyline (made from cotton or linen rags dissolved in ether or alcohol) that held a quantity of soluble iodide, bromide or chloride and was made light sensitive by placing it in a bath of silver nitrate.<sup>127</sup> According to Charles A. Long in 1854 the qualities it offered for photography included: 'a capability of being rendered extremely sensitive to light, toughness, tenacity and freedom from impurities of any kind'.<sup>128</sup> Collodion manufacture was complex and fraught with difficulties. For the amateur, especially, commercially manufactured collodion preparations offered a product that was, generally, consistent between batches and of a known quality, although there were variations between manufacturers. Unlike the daguerreotype process which required photographers to make up their own processing chemicals photographers using wet collodion were freed from having to prepare all their own solutions. This encouraged the take up of collodion, especially for amateur use.

Commercial photographers who continued to make their own collodion for their studios frequently offered it for sale to amateurs and to other professionals. W. Barker, a chemist turned photographer, advertised in 1854 that amateurs could be 'supplied with iodised collodion and pure photographic chemicals'.<sup>129</sup> Dolamore and Bullock of Regent Street, London, advertised in 1856 that they 'invite[d] the attention of amateurs to their preparation of negative collodion'.<sup>130</sup> More common was the manufacture of

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<sup>127</sup> Thomas Sutton, *A dictionary of photography*, London: Sampson, Low, Son, and Co., 1858, pp. 121-124, 342-346.

<sup>128</sup> Charles A. Long, *Practical photography on glass and paper*, London: Bland and Long, 1854, p. 6.

<sup>129</sup> Advertisement, *Liverpool Photographic Journal*, no. 1, vol. 1, 14 January 1854, p. v.

<sup>130</sup> Advertisement, *Liverpool Photographic Journal* no. 27 vol. 3, 8 March 1856, n.p.

collodion by chemists that offered it for sale either from themselves or via agents. Joseph G. Lewis of Liverpool noted 'that his iodized collodion is acknowledged by the highest authorities here and in London to be the collodion for the artist and amateur, being capable of preservation in the same condition several weeks after iodizing, and is moderate in price'. Leeds-based J. W. Ramsden claimed his collodion 'is acknowledged by all who have tried it to be superior to any similar preparation'. It was sold in London through E. G. Wood and by other agents across Britain.<sup>131</sup> There were numerous other collodion manufacturers.

The claims of individual collodion manufacturers were possibly inflated for advertising purposes and an attempt was made to test them. The collodion of T. Frederick Hardwich, a lecturer in chemistry and photography, was acclaimed by the Collodion Committee that had been set up by the Photographic Society in March 1859 to examine supplies of collodion and to report on them.<sup>132</sup> Collodion had been received from Hardwich, the photographer John Mayall and the amateur and photographic publisher Thomas Sutton. Insufficient quantities were supplied by the latter two and eventually it was only Hardwich's that was tested. The committee reported:

The collodion which Mr Hardwich has sent in to them is comparatively, if not entirely, free from glutinosity, crapy lines, contractility, and other defects of the film, which were very commonly met with some years back, when the manufacture of collodion was first commenced...the committee have much pleasure in expressing their opinion of the superior excellence of the collodion submitted to them by Mr Hardwich, and they can confidently recommend the Society to stamp the same with the fullmark of its approbation<sup>133</sup>

This recommendation, while advantageous for Hardwich who was manufacturing collodion commercially, prompted criticism from Society members who felt that by not examining other collodions the committee had failed to do what it had been tasked. In answering critics Hardwich noted that he had been making collodion for three years and

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<sup>131</sup> Advertisements, *Liverpool Photographic Journal*, no. 31 vol. 3, 12 July 1856, n.p.

<sup>132</sup> 'Report of the collodion committee', *The Photographic Journal being the Journal of the Photographic Society*, no. 94, vol. 6, 15 February 1860, pp. 151-155.

Manufacturer	Collodion type
R. W Thomas, London	Negative collodion with usual iodizer
	Negative collodion with cadmium iodizer
	Positive collodion with usual iodizer
Alfred Keane, Leamington	Negative view collodion
	Negative portrait collodion
	Positive collodion
Henry Pizey	Negative collodion
Thomas Perry, Sheffield	Bromo-iodized xyloidin
Burfield and Rouch, London	Ordinary negative collodion
	Negative collodion, iodized with cadmium
	Bromo-iodized collodion
J. W. Ramsden, Leeds	Collodion, for Fothergill and dry processes
	Positive collodion
	Negative collodion
Thomas Cadby Ponting, Bristol	Iodized negative collodion

Table 4. Collodions advertised in September 1860. *Source: Advertisements, the Photographic Journal, 15 September 1860.*

that 'many hundred of gallons had been prepared'.<sup>134</sup> In April 1860 Hardwich announced that he was giving up the manufacturing of collodion and W. W. Rouch of Burfield and Rouch, operative chemists, which had been Hardwich's wholesale agents began to make collodion to Hardwich's formula.<sup>135</sup> A laboratory was erected:

replete with every appliance, is devoted to their [various collodions]. Every sample is tested, and the utmost care is taken to ensure perfect uniformity. Each bottle is protected by a red label and trade mark, and accompanied with a new and comprehensive paper of directions.<sup>136</sup>

The trade in collodion was extensive with a number of makers producing a range of

<sup>133</sup> 'Report of the collodion committee', *The Photographic Journal being the Journal of the Photographic Society*, no. 94, vol. 6, 15 February 1860, pp. 151-155.

<sup>134</sup> T. Frederick Hardwich, 'On the collodion committee', *The Photographic Journal being the Journal of the Photographic Society*, no. 95, vol. 6, 15 March 1860, pp. 183-184. The Society meeting on 6 March 1860, following the presentation of the collodion committee's report, had generated a lengthy discussion about the usefulness of the report.

<sup>135</sup> *Photographic Notes*, no. 96, vol. 5, 1 April 1860, p. 101.

<sup>136</sup> Advertisement, *The Photographic Journal being the Journal of the Photographic Society*, no. 97, vol. 6, 15 May 1860, n.p.

collodions for different purposes. Table 4 shows the collodions being advertised in the *Photographic Journal* of September 1860.

One of the most popular collodions was that made by R. W. Thomas and Company. Obituaries in 1881 had noted that 'Mr Thomas's establishment in Pall Mall is one of the oldest connected with the manufacture of collodion in the country' and that by 1853 'Mr Thomas had almost a monopoly of the collodion trade, as with the exception of Ponting, of Bristol, there were no other makers of importance'.<sup>137</sup> It is difficult to reconcile this view with the large number of advertisements for rival makes of collodion. Maddison, for example, claimed '3000 testimonials' for its positive collodion suggesting that he, too, enjoyed considerable commercial success.<sup>138</sup> Thomas's collodion certainly had a strong reputation and was still being advertised extensively in the late 1880s long after dry plates had become widely accepted by both amateur and professional photographers (see Illustration 10).<sup>139</sup>

One variant of the wet collodion plates was the collodion dry plate which was introduced several years after wet collodion plates. They offered photographers the opportunity to buy a sensitised plate that could be simply loaded into a holder and inserted into the camera and exposed without the need for preparation and processing facilities close to hand. They were better suited to being retailed as they could be packed into boxes, distributed and sold more easily than bottles of liquid collodion.

The dry plate that found the greatest commercial success was that of Dr Richard Hill Norris. His dry collodion process was announced in 1856 and was the subject of British

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<sup>137</sup> 'The late Mr R. W. Thomas', *British Journal of Photography*, no. 1106, vol. 28, 15 July 1881, p. 368; no. 1107, vol. 28, 22 July 1881, p. 377.

<sup>138</sup> Advertisement, *British Journal of Photography*, no. 118, vol. 7, 15 May 1860, p. xi.

<sup>139</sup> Advertisement, *British Journal Photographic Almanac 1888*, London: Henry Greenwood and Co., 1888, p. 573. By 1888 wet collodion was generally only being used for specialised work such as copying plans and map-making for which it still offered an advantage in terms of the sharpness of the image.



patent number 2029 of 1 September in that year.<sup>140</sup> It offered a plate that remained sensitive when dry and was reasonably sensitive to light. Hill Norris established his own company, the Patent Dry Collodion Plate Company, in Birmingham, in 1857, to exploit his patent, although producing a plate that could be made commercially took some time to bring to fruition. Dr Paterson of Leith was able to state only in 1860 that 'the dry collodion process... was now beginning to occupy a prominent position in photography, not only from the effects being equal to anything yet produced by the wet collodion process, but from its being so much more portable and convenient in the field'.<sup>141</sup>

Hill Norris's plates were popular with amateurs who found their sensitivity and convenience a considerable boon over wet collodion plates with the latter requiring processing immediately after exposure. Commercial portrait photographers were less enamoured by their quality and, in any case, they generally had a dark room within their studio premises for processing purposes. By 1860 the Hill Norris company had established a network of agents to sell his plates with fourteen in London, thirty-two in the provinces and one in Canada suggesting that he had found a ready market for its product.<sup>142</sup>

A small number of other manufacturers advertised their own dry processes including J. G. Rousseau of Peckham, and there were other technical developments by various experimenters.<sup>143</sup> The *Photographic Notes* remarked in 1860:

Photography has just made an immense stride, and its votaries may now go about with their cameras and dry plates, and take instantaneous pictures with all the rapidity of wet collodion, and develop them at home at their leisure. It is

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<sup>140</sup> Hill Norris's patent was titled 'Certain improvements in photography by the use of collodion in a dry condition, and for a means of transferring photographic films'. It described a process that retained sensitivity and longevity before use. Hill Norris identified that an important function of the preservative coating on a collodion dry plate was to fill up the pores of the collodion while they were still wet.

<sup>141</sup> 'On the dry collodion process', *British Journal of Photography*, no. 110, vol. 7, 15 January 1860, p. 29.

<sup>142</sup> Advertisement, *British Journal of Photography*, no. 109, vol. 7, 1 January 1860, p. xi.

<sup>143</sup> Advertisement, *British Journal of Photography*, no. 122, vol. 7, 16 July 1860, p. xi; 'A retrospective glance', *British Journal of Photography*, no. 205, vol. 11, 1 January 1864, pp. 1-2.

impossible at present to estimate the full value of the recent and most important discovery of Dr. Hill Norris, viz., the method of preparing dry collodion plates which after being kept for a length of time sensitive, and transported hundreds and thousands of miles, are capable of being impressed with the same rapidity, and developed with the same ease and certainty as a wet collodion plate fresh from the nitrate bath, and in its most sensitive possible state.<sup>144</sup>

Claims regarding the sensitivity of dry plates were put to the test by the South London Photographic Society which reported in 1861 that 'the plates at present prepared by the Dry Plate Company [Hill Norris's company] are about one-third less sensitive than by the most rapid wet collodion, and equal to that of average sensibility'.<sup>145</sup> The *British Journal of Photography* was willing to recommend them to the amateur.<sup>146</sup> For many amateurs the benefits they offered outweighed their disadvantages.

### The market and retailing photographic goods

During the early period up to the 1870s there were three markets that photographic manufacturers and retailers were targeting. Firstly, there was the professional market, which had grown from just two portrait studios in London in 1841 to 4,715 photographers in England and Wales at the 1871 census.

The second market was what has been termed the 'gentleman-amateur', which comprised amateurs from the upper middle classes with the resources to practice photography as a leisure pursuit. They were frequently members of a photographic society and interested in photography for its artistic, scientific or recording possibilities. The numbers involved are difficult to determine but the London Photographic Society, the leading British society, had 370 members in 1854 and 421 in 1859 which by 1896

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<sup>144</sup> *Photographic Notes*, no. 108, vol. 5, 1 October 1860, p. 259.

<sup>145</sup> 'Report of the Experimental Committee of the South London Photographic Society on the dry processes', *British Journal of Photography*, no. 133, vol. 8, 1 January 1861, pp. 9-10.

<sup>146</sup> For an example see: 'Answers to correspondents', *British Journal of Photography*, no. 190 vol. 10, 15 May 1863, p. 222. In response to an enquiry by 'Lazy Amateur' the *BJP* noted the Dry Collodion Plate Company plates which 'we have tried and found good'.

had increased to only 560. The leading provincial societies had memberships below one hundred until the 1880s.<sup>147</sup> At best the number of amateurs in Britain up to the late 1870s probably numbered less than a thousand individuals at any one time.

The commercial portrait studios were more consistent with their demand for raw and prepared materials, while placing one-off or occasional orders for photographic equipment. The gentleman-amateur once equipped with a camera and apparatus was likely to require limited amounts of materials concentrated within a photographic season that ranged between April and September. Unlike the post-1880s there was no demand from the equivalent of the snapshotter. The limited nature of demand up to the 1880s from these groups was reflected in the number of retail outlets, which after rising to a peak in 1865 then declined before starting a continual rise from 1885 until 1905, before declining slightly to 1914, (see Figure 18 on page 299).

#### *Amateur versus professional*

The distinction between the commercial portrait photographer and the amateur was one that preoccupied the photographic press and was the subject of debate within photographic societies during the 1850s and 1860s and beyond. In practical terms the equipment and materials the amateur used was little different from that used by professional photographers up to the 1870s. In terms of chemistry there was no distinction. The differences that existed reflected more the place that a photograph was being made: within a studio or elsewhere rather than the commercial status of the photographer.

In a telling piece published in 1881 John Nicol lamented the decline in the number of amateurs compared with the 'thousands' that had been excited by the calotype,

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<sup>147</sup> Precise figures are difficult to obtain but the Manchester photographic society had a membership of 73 in 1862 which had climbed to 93 in 1868 and 70 in 1877. The Liverpool Amateur Photographic Society had 57 in 1877. Most other societies numbered members in the low tens.

daguerreotype and the introduction of collodion.<sup>148</sup> While Nicol was probably over-generous in his assessment of the number of amateurs during the first two decades of photography the distinction between the professional and amateur and their relative roles was one that was of greater concern. The definition of a professional as one who made his livelihood by photography covered the commercial portrait photographer, but the definition of an amateur was not simply the opposite: there were gradations of earnings from photography that complicated matters. So while one might sell a few prints which would not make one a professional photographer, for some it justified the removal of the amateur status. In addition, there were a number of photographers who straddled the boundaries of both definitions depending on the nature of their work. Many were artists using photography as a medium for their work and others, such as Roger Fenton, started as an amateur but undertook work for the British Museum and sought to commercialise his Crimean photographs.<sup>149</sup>

The important role of the amateur for photography was widely acknowledged. Nicol correctly assessed that progress in the technical development of photography had largely been the result of amateur experimentation with professionals unable to devote the time or lacking the interest to advance their trade.<sup>150</sup> This had been especially so from the late 1840s as photographers looked for more workable alternatives to the daguerreotype process. It was no coincidence that Scott Archer was an amateur photographer and an artist. From the 1870s the situation changed so that it was no longer the amateur photographer but commercial firms that made the greatest number of technical improvements to the medium. Thomas Sutton in 1860, looking back to 1851, described the approach of the amateur to photography as:

*rational* enthusiasts, and not men to take up a hobby in a hurry and give it up in

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<sup>148</sup> John Nicol, 'Concerning amateurs', *British Journal of Photography*, no. 1081, vol. 28, 21 January 21 1881, p. 32.

<sup>149</sup> Sarah Greenough and Roger Taylor discuss this in Baldwin et al., *All the mighty world. The photographs of Roger Fenton, 1852-1860*, New Haven: Yale University Press, 2004, pp. 24-26, 52.

<sup>150</sup> There were, of course, notable exceptions to Nicols's generalisation. Antoine Claudet amongst others was a commercial portrait photographer who made many important contributions to the technical and artistic development of photography.

a pet. The amateur of 1851 was a man who first considered the cost of the apparatus and the artistic value of the results, and who after having weighed the matter in his mind and determined to become a photographer, worked *steadily* at it...<sup>151</sup>

In Britain the daguerreotype process had essentially been a process operated by professionals and the calotype, which had a few commercial operators, was dominated by amateur photographers. The introduction of collodion processes changed the dynamic within which the amateur operated. The advantages of collodion in terms of its sensitivity and results, if not with its operation, meant that both professionals and amateurs turned to it, although the calotype continued to find favour amongst some amateurs in to the 1860s. Sutton saw the introduction of the collodion process as a 'misfortune' making everything 'too easy, too quick, and consequently too harum-scarum...' From the mid-1850s there was little to distinguish between the amateur and professional photographer from a technical perspective and any distinction made was a purely a commercial one.

By the 1870s the number of amateur photographers had started to decline.<sup>152</sup> There were no obvious reasons for this, although the number of professional photographers also reached a plateau by the late 1860s.<sup>153</sup> The *British Journal of Photography* suggested that the fall in amateur numbers was because of the need for them to keep buying more expensive equipment each year.<sup>154</sup> What is more likely is that those amateurs wanting to take up photography had largely done so and that there was a natural turnover of those leaving the hobby without sufficient new entrants to maintain numbers. In terms of its practical manipulation, photography had not progressed in any substantive way since the early 1850s in terms of its chemistry and technology and this was acting as a barrier for new entrants.

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<sup>151</sup> *Photographic Notes*, no. 106, vol. 5, 1 September 1860, p. 230.

<sup>152</sup> The evidence for this is both anecdotal from the photographic press and from the membership numbers of photographic societies which had been declining in some cases.

<sup>153</sup> The number of photographic studios in London, for example, underwent a slight decline and their numbers remained largely static until the end of the 1890s.

<sup>154</sup> 'Seasonable Suggestions', *British Journal of Photography*, no. 765, vol. 22 1 January 1875, pp. 3-4.

As a consequence the prevailing view that amateurs needed to prepare their own materials began to break down from the 1870s. The traditional view of an amateur as someone able to prepare, coat and process his own materials was increasingly seen as anachronistic. A new debate centred around whether the photographic process was simply a means to an end i.e. producing photographs, or whether, as one commentator suggested, 'the making of collodion, nitrate of silver, albumenised paper, chloride of gold, and cyanide of potassium should be a part of the curriculum in every young photographer's education'.<sup>155</sup>

This discussion continued but, with the exception of some die-hards, was largely overtaken with the widespread take up of commercial dry plates from the late 1870s. There was an acceptance that dry plate emulsions were at last equal to the wet-collodion process, so much so that Nicol, who had lamented the decline in the number of amateurs, now foresaw that this would act to increase their number.<sup>156</sup> Throughout the 1880s the number of amateurs was perceived to be increasing and by 1886 the *British Journal of Photography* reported that: 'the number of amateurs now far exceeds that of any period in the history of photography'.<sup>157</sup> Changes in photographic technology and the availability of commercially manufactured materials directly contributed to an increase in amateurs and supported interest in photography as a leisure pursuit.

The general perception of what defined an amateur photographer had changed by the 1880s. It moved away from one who practiced photography and had an understanding and practical knowledge of all aspects of its operation from making the plate to producing a print, to one who made photographs. The amateur did not necessarily

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<sup>155</sup> See: 'Should photographers prepare their own materials?' *British Journal of Photography*, no. 839, vol. 23, 2 June 1876, pp. 254-256; A peripatetic photographer, 'Notes on Passing Events', *British Journal of Photography*, no. 844 vol. 237 July 1876, pp 315-316.

<sup>156</sup> John Nicol, 'Concerning amateurs', *British Journal of Photography*, no. 1081, vol. 28, 21 January 21 1881, p. 32.

<sup>157</sup> *British Journal of Photography*, no. 1391, vol. 33, 31 December 1886, p. 823.

operate all aspects of the process so could, for example, buy ready-prepared plates.<sup>158</sup> In both cases the amateur made no commercial gain and the main difference between an amateur and a studio photographer was that the latter made his living from photography. The advantages of dry plates and their ease of use was, in part, responsible for the increase in the number of amateur photographers but a few commentators such as Alex Lamson in 1890 argued: 'photographers who merely "press the button" and leave some one else to "do the rest" are really not entitled to the honourable name'.<sup>159</sup> For most the debate was settled: amateur photography was about making a photographic print and the need to make and even develop one's own plates had been rendered unnecessary by the availability of commercially-made plates. Without openly stating so this suggests that there was a class of photographer with no interest in any aspect of photography other than simply taking photographs.

#### *Government photography*

The third market, which was the smallest, was made up of the photographic departments of various branches of government, both British and overseas. Those from Britain were principally the War Department, the Ordnance Survey and educational institutions which employed a few tens of people. Although small in terms of individuals they had the potential to place large orders for equipment and in particular for chemicals and materials. As early as 1859 the War Department placed an order for apparatus and materials 'for forwarding photographic apparatus to every military station in the empire, for the purpose of taking views of coast-lines, fortifications, &c., for transmission to

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<sup>158</sup> H. Y. E. Cotseworth, 'What is an Amateur?', *British Journal of Photography*, no. 1393, vol. 34, 14 January 1887, p. 21. Cotseworth's basic definition was: 'an amateur is one who follows some particular pursuit as a means of profitably filling up what would otherwise be waste time' which was set within the wider discussion of whether he needed to prepare his own plates.

<sup>159</sup> Alex Lamson, 'Press the Button', *British Journal of Photography*, no. 1581, vol. 37, 22 August 1890, pp. 537-538.

headquarters'.<sup>160</sup> The South Kensington Museum, for example, spent £1,000 on photographic materials in 1862.<sup>161</sup> Foreign governments, too, were active in ordering photographic goods from British firms. In 1861 the optician Ross and Company and camera maker Ottewill and Company were the beneficiaries of an order from the Italian government for a complete photographic outfit for a newly establish photographic department.<sup>162</sup> Although such orders were irregular, the on-going expenditure for materials was more worthwhile and would have been spent with London-based retailers and manufacturers.

### *Early retailing and marketing*

Earlier this chapter looked at the manufacturers of photographic equipment and materials. Many of these firms retailed the goods they were making from the same premises and continued to do so until they went out of business or dropped manufacturing completely and substituting it for simply retailing goods. As examples, J. B. Dancer in Manchester and Chadburn Brothers in Sheffield were all retailing and making scientific instruments and photographic goods from their respective premises (see Illustration 11). Some larger concerns established separate premises for manufacturing and maintained their own retail premises close by, but these were the exception.

There are few descriptions of the early firms' premises but descriptions of scientific instrument makers suggest that for the period up to the 1850s those which manufactured instruments were also responsible for directly retailing their output and, in some cases,

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<sup>160</sup> 'Progress of photography', *British Journal of Photography*, no. 99, vol. 6, 1 August 1859, p. 190. The Royal Engineers published details of their use of photography and the materials required for practising photography in Captain Shaw, 'Paper XVIII. Notes on photography', *The professional papers of the corps of Royal Engineers*, vol. 9, New Series, Chatham: Institution of Royal Engineers, 1860, pp. 108-128. I am grateful to Terry Bennett for drawing this paper to my attention.

<sup>161</sup> 'Photography at the South Kensington Museum', *British Journal of Photography*, no. 190, vol. 10, 15 May 1863, p. 218.

<sup>162</sup> S[amuel] H[ighley], *British Journal of Photography*, no. 145, vol. 8, 1 July 1861, p. 243. Highley also reported on a 'monster' 60 inch lens by Dallmeyer and camera to support the lens by Ottewill that had been commissioned by the 'Government establishment at South Kensington' (1 October 1861, p. 348).



supplying products to other retailers.<sup>163</sup> For the specialist photographic retailers that began to emerge as distinct entities from the early 1850s sourcing products to sell was not difficult. The firm of Alexis Gaudin and Brothers had London retail premises and imported goods from their Paris manufactory. Some retailers such as Joseph Solomon carried an extensive stock from different suppliers and others such as Jonathan Fallowfield and James F. Shew were making or assembling equipment at their retail premises as well as buying in goods from others for re-sale. Most manufacturers could be commissioned to make apparatus to a specific design for a retailer to sell under their own name.

As specialist photographic manufacturers began to appear from the late 1840s and early 1850s firmer evidence emerges of the nature of their retail premises. The manufacturing premises of Ottewill, Meagher and Hare in London were all retailing apparatus made on site. Francis's photographic apparatus manufactory at 101, Great Russell Street, London, undertook manufacturing and retailing from the same premises. These are not isolated examples: it was the standard photographic business model for the period.<sup>164</sup>

For smaller firms this way of selling to the public maintained a public front while keeping overheads, in terms of workshop space and staff, to a minimum and it remained the favoured way of working into the early twentieth century.<sup>165</sup> For larger businesses, or as smaller firms outgrew their premises, the separation of retailing from manufacturing began to make better commercial sense (see Illustrations 12 and 13). Where premises were large enough then some larger firms maintained combined workshop and retail premises. Lonsdale Brothers, for example, which also sold directly to the trade, opened a large manufactory in London in 1896 together with a showroom

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<sup>163</sup> A. D. Morrison-Low, *Making scientific instruments in the industrial revolution*, Aldershot: Ashgate Publishing, 2007. Morrison-Low's study identifies a number of manufacturer-retailers and evidence suggests that a similar situation applied to photographic goods made by instrument retailers.

<sup>164</sup> Inventories taken for bankruptcy administration or after the death of the principal at a number of premises reveal finished stock articles for sales as well as the machinery and tools used to make them.

<sup>165</sup> For a very few such firms such as Gandolfi which was still manufacturing cameras in the traditional way until the early 1980s their business model did not change. They made and sold cameras and accessories from the same premises.

to exhibit and sell their products.<sup>166</sup> Other firms established selling offices, usually in London, away from their manufacturing premises to display and sell goods from.

#### *Advertising photographic goods*

The way that photographic goods were marketed up to the 1870s was unsophisticated. Advertising was the principal means of promoting goods and, other than exhibitions or demonstrations of equipment, there were few other significant activities available that might be called marketing.

In general, advertisements during the period 1839 to the 1870s were text based and only occasionally enlivened with an engraving of a camera or piece of equipment (see Illustrations 14 and 15). This was partly a reflection of the printing methods used for newspapers and magazines of the period. Before specialist photographic periodicals were established from 1853 any advertising that took place was directed across a range of general publications such as *Notes and Queries*, the *Athenaeum* and *Times* newspaper and other general periodicals. It was aimed at commercial portrait photographers, amateurs and the public looking for a studio. As an example one issue of *Notes and Queries* from 1853 carried approximately one column of advertising for photographic materials, equipment, photographs and teaching out of a total of nine columns of advertising.<sup>167</sup>

Mostly these advertisements were short lines of text announcing the availability of a particular product or simply giving details of the retailer's address under a brief heading. Some were repeated without change over weeks or months. The absence of more widespread advertising was a reflection of the limited market for photographic goods. Commercial portrait studios, the main market for equipment and chemicals

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<sup>166</sup> 'Messrs Lonsdale Bros.', *The Photographic Dealer*, June 1896, pp. 4-6.

would have been aware of where to obtain their supplies and it is likely that the amateur was the main target for these advertisements. Scientific instrument makers, opticians or chemists that were advertising their main business frequently mentioned photography as part of a wider portfolio of goods.

Advertising from photographic retailers and manufacturers largely switched to the specialist photographic press once titles began to be established, although *Notes and Queries* continued to regularly deal with photography until the 1860s. Advertisements for studios rightly stayed in the general press. The main publications were the *Journal of the Photographic Society*, established in 1853, the *British Journal of Photography*, established 1854, *Photographic News*, established 1858 and *Photographic Notes*, established 1856. Of these, the first was the house journal of the London Photographic Society but it had an influence beyond its membership. The latter three became independent trade periodicals, although *Photographic Notes* was so dominated by its owner Thomas Sutton that it was more often seen as an extended newsletter. All carried advertising pages wrapped around their editorial pages. Up to the 1860s many of these advertisements continued to be text only, although a number of camera makers such as Ottewill included an engraving of a camera. They concentrated on listing papers and chemicals and services for photographers such as printing. There was no direct attempt to target advertisements towards the amateur which reflected the absence of any real distinction between the requirements of the professional and amateur at this time.<sup>168</sup>

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<sup>167</sup> *Notes and Queries: A medium of inter-communication*, no. 191, 25 June 1853, pp. 634-636. The advertisements consisted of: Bland and Long (photographs and apparatus); John Sanford (photographic paper); Thomas Ottewill (apparatus); Horne & Co. (collodion and apparatus); George Knight & Sons (manual, lenses and papers); J. B. Hockin (collodion, chemicals and apparatus); T. A. Malone (photographic school).

<sup>168</sup> Detailed analysis of advertisements is made difficult as journals were generally bound without their outer wrappers and advertising pages. From occasional surviving complete issues it is clear that advertising was limited to the same small number of firms. *Photographic Notes* in 1856 was twenty pages including covers within which there were four pages of advertisements. In 1864 an issue was twenty-four pages with eight complete pages of advertising. All the adverts were directed towards photographers without any distinction between professionals and amateurs. The *Journal of the Photographic Society* in 1859 consisted of ten pages of editorial matter around which were wrapped twenty pages of advertisements. Some of these were directed towards amateurs reflecting the Society's membership. No complete issues of the *British Journal of Photography* or *Photographic News* from this early period have been located.

During the later 1860s advertisements increasingly began to feature engravings of the goods being advertised and consistent typography was occasionally used across publications to build an association with particular advertisers. There was little concerted effort to extend advertisements either visually or in terms of their content much beyond those that had appeared from the early 1850s. In addition to paid-for advertising manufacturers and dealers also made use of the photographic press and photographic societies to 'puff' or indirectly advertise their products. The practice was described and complained about by a correspondent to the *Photographic News* in 1864.<sup>169</sup> In the journals it was done through eliciting comment in editorial material and through the inclusion of letters from manufacturers promoting their goods - sometimes by clerks or touts acting for the firm. At the photographic societies it was achieved by reading a paper giving a detailed account of a product or exhibiting a photograph which was produced with a particular lens, collodion or camera. The correspondent called puffing a growing evil that degraded both the journals and societies unwittingly involved, that was unfair to other firms, and was misleading to photographers.

#### *The early trade list*

The precise definition of a trade catalogue is still debated but the issuing of a list of goods for sale was an established tool for manufacturers and retailers to promote their goods.<sup>170</sup> Those making and selling photographic goods also made use of trade catalogues soon after photography was announced. It was one of the principal forms of marketing from the early 1840s and remained so throughout the entire period of this

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<sup>169</sup> 'Puffing at photographic societies, &c', *Photographic News*, no. 294, vol. 8, 22 April 1864. pp. 201-202.

<sup>170</sup> Gaye Smith in her exhibition of trade catalogues defined them as 'promotional material which describe a product or a variety of products'. Anderson *et. al.* in their publication on scientific instrument makers trade catalogues had a definition to suit their own purposes. Based on these previous works and an examination of photographic trade catalogues from 1840-1920 a more precise definition, particularly applicable to photography might be: 'a printed list, usually of two or more sides, describing a range of either photographic apparatus, chemicals, materials or photographs, or any combination of these, then available, usually with prices'. This allows for simple printed sheets, pamphlets, books and those included as part of other publications but excludes advertising material relating to a single camera or process.

study (see Illustration 16).<sup>171</sup> Such catalogues often provided the only detailed description of an entire range of products from a particular manufacturer or those that a retailer was selling, in contrast to advertising which described a limited number of products. For many photographers outside the main cities the trade catalogue also acted as a key means of ordering goods, particularly early on when there were limited numbers of retailers away from London and the main provincial centres.

Catalogues or lists of apparatus were advertised as being available from the early 1840s although compared to the post-1880s very few appear to have survived. A number were bound into the first photographic manuals, many of which were either written or published by retailers of photographic goods, from the early to mid-1840s. As an example, T. & R. Willat's *Practical hints on the daguerreotype* from 1845 included a list of the cameras, lenses and chemical preparations sold by them.<sup>172</sup> Lists separate from other publications were also published as with Andrew Ross, for example, issuing a separate twelve page catalogue of his scientific instruments, dating from 1855.<sup>173</sup> It included a five-page section describing cameras, lenses and materials for the calotype, daguerreotype and collodion processes.

A consequence of the initial absence of specialist photographic retailers was that photographic equipment and materials often appeared within the catalogues of philosophical instrument makers, opticians and chemists. As some of these firms opened specialist photographic departments they began to issue separate lists of photographic goods. Horne and Thornthwaite began publishing photographic catalogues from the late 1840s, usually as part of the manuals written by W. H. Thornthwaite who was an active photographer and it seems likely that they were also issued separately. By

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<sup>171</sup> A detailed discussion of the trade catalogue is given in: Michael Pritchard, 'The Photographic Trade Catalogue in Britain 1839-1916' in *The Ephemerist*, no. 145, Summer 2009, pp. 3-12. This discussion is continued for the post-1880s period in Chapter 6.

<sup>172</sup> T. & R. Willats, *Practical hints on the daguerreotype*, London: T. & R. Willats, 1845. Although the catalogue is not illustrated the manual includes line illustrations of some of the equipment described. T. & R. Willats were opticians at 98, Cheapside, London.

<sup>173</sup> Andrew Ross, *A catalogue of optical, philosophical and mathematical instruments made and sold by Andrew Ross*, London: Andrew Ross, 1855.

1856 the firm was distributing a separate 'trade list' for 'professional photographers and the trade' on receipt of a business card.<sup>174</sup>

With the arrival of specialist photographic manufacturers and retailers - and increasing competition between them for the business of professional and amateur photographers - the trade catalogue assumed a greater importance as a selling tool. This was especially so for photographers away from London and the main photographic retailing centres who relied on being able to have supplies delivered. Most catalogues were small and were mailed free on request or in return for a stamp to cover postage. The content and organisation of the list was also given some thought. James Shew emphasised the alphabetical order of his list in 1859 and repeatedly described it as the 'best arranged'.<sup>175</sup> Other firms described their catalogues as 'detailed', 'most complete' or 'a complete list', or were simply content to highlight that their catalogue was 'illustrated'.<sup>176</sup> Some manufacturers, reinforcing their commercial distance from consumers, which the establishment of specialist retailers had begun to effect, started to issue wholesale price lists.<sup>177</sup>

From the 1860s the photographic press began to take notice and review catalogues. The *Photographic News* was content to comment only on the directions to operate processes given in Shepherd and Co.'s *Guide to photography* rather than the list of goods at the back 'as this Guide is published for trade purposes, [and] it scarcely comes legitimately within the scope of the reviewer's pen'.<sup>178</sup> It still maintained this position in 1863 when it noted Fallowfield's *A simple and practical guide to photography*:

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<sup>174</sup> Advertisement, *British Journal of Photography*, no. 32, vol. 3, 9 August 1856, n.p.

<sup>175</sup> Advertisement, *British Journal of Photography*, no. 102, vol. 6, 15 September 1859, p. ii.

<sup>176</sup> Advertisement, *British Journal of Photography*, no. 109, vol. 7, 1 January 1860, p. x. Examples come from advertisements by Frederick J. Cox, Ottewill, Collis, and Co. and W. Bolton from the *British Journal of Photography* and *Photographic News* between 1860-1879.

<sup>177</sup> It is unlikely that the word 'wholesale' was being used in a modern sense with goods only being supplied to retailers rather than directly to the consumer. Harvey & Reynolds of Leeds noted a 'new & reduced wholesale price list of photographic materials and apparatus' (1860) and William Hobcraft a 'wholesale price list' although he also had retail premises in Oxford Street.

<sup>178</sup> 'Critical Notices', *Photographic Notes*, no. 101, vol. 4, 10 August 1860, p. 177.

This little work appears to be really an introduction to a catalogue of photographic chemicals and apparatus, and consists of less than a score of widely printed pages. The system of adding a few instructive pages to the trade catalogue is becoming common, and is by no means a bad one, provided it be well done.<sup>179</sup>

The reviewer felt the text was 'not infrequently disfigured by obscurity, bad grammar and plagiarism'. This attitude stayed with the *Photographic News* so that even by 1887, when reviewing the London Stereoscopic Society's *The ABC of modern (dry plate) photography*, it stated: 'It is fair to mention that the book is shabby, or, to some extent, of the nature of an advertisement for the apparatus sold by the publishers'.<sup>180</sup> The *British Journal of Photography* adopted a more relaxed attitude in line with its greater trade-orientated perspective and from the mid-1870s it was content to make editorial notice of trade catalogues and to review their content. One of the first of these reviews was in 1876:

We have received from Mr John J. Atkinson, of Liverpool, one of the largest, if not the very largest, and most comprehensive catalogues of photographic specialities that has ever been placed upon our editorial table... As will be anticipated from Mr Atkinson's transatlantic connection, that gentleman is the English agent for all articles of American manufacture.<sup>181</sup>

In response to the receipt of catalogues from Masons and Company of Glasgow and W. Morley of Islington, the journal noted: 'It is a healthy sign of vitality when new editions of trade catalogues are being issued'.<sup>182</sup>

Data on the number of catalogues being circulated during the period up to the 1880s is harder to come by. It is likely that those catalogues not included in manuals or handbooks probably had print runs in the hundreds, with those included as part of other publications exceeding this into the thousands. Bland and Company advertised that their manual *Practical photography*, which included a catalogue, 'was published eight years

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<sup>179</sup> 'Critical Notices', *Photographic Notes*, no. 248, vol. 7, 5 June 1863, pp. 266-267.

<sup>180</sup> 'Reviews', *Photographic News*, no. 1448, vol. 31, 11 March 1887, p. 148.

<sup>181</sup> 'Atkinson's Catalogue', *British Journal of Photography*, no. 849, vol. 23, 11 August 1876, p. 384.

<sup>182</sup> 'Trade catalogues', *British Journal of Photography*, no. 934, vol. 25, 29 March 1878, p. 154.

ago, and since that period four large editions, comprising not less than twenty thousand copies, have been issued'.<sup>183</sup> By comparison, the *Photographic News*, the largest selling of the photographic journals, had a print run of 7000 copies a week in 1869.<sup>184</sup> Compared with periodicals which were frequently bound without advertisements, the trade catalogue had a longer life span because it was retained until a new edition was issued. From the 1880s the nature of the trade catalogue changed significantly in response to the growing mass market.

### *Exhibitions*

Between 1851 and 1901 there were some forty-one major international exhibitions staged in all continents of the world which had attracted at least 200 million visitors.<sup>185</sup> The two major British international exhibitions held in 1851 and 1862 had a combined total of just over six million visitors and provided photographic manufacturers with an opportunity to exhibit their products. A small number took advantage of the opportunity. Although both these exhibitions were not commercial in the sense that exhibits were not being sold directly to visitors they provided a showcase to an international audience through the physical display of goods and inclusion in the various exhibition catalogues. They also placed British goods within an international context. This benefited some objects such as cameras; others such as photographs bore unfavourable comparisons with their foreign counterparts.<sup>186</sup>

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<sup>183</sup> Advertisement, *British Journal of Photography*, no. 184, vol. 10, 16 February 1863, p. vi.

<sup>184</sup> Quoted in Steve Edwards, *The making of English photography: allegories*, Pennsylvania: Penn State University Press, 2006, p. 4.

<sup>185</sup> This figure is given by R. G. W. Anderson, 'Were scientific instruments in the nineteenth century different? Some initial considerations' in P. R. de Clercq, *Nineteenth-century scientific instruments and their makers. Papers presented at the fourth scientific instrument symposium, Amsterdam 23-26 October 1984*, Amsterdam: Rodopi, 1985, p. 7.

<sup>186</sup> The way photographic exhibits were selected and displayed and the classes in which they were included is outside the scope of this thesis. For a discussion of these see: Roger Taylor, *Impressed by Light. British photographs from paper negatives, 1840-1860*, New Haven: Yale University Press, 2007, pp. 31-55.



Manufacturer	Location	Exhibited
Chance Brothers and Company	Birmingham	Optical Glass
Horne, Thornthwaite & Wood	London	Photographic apparatus
Robert Field and Son	Birmingham	Photographic lenses.
Andrew Ross	London	Photographic apparatus
Robert Beaufort		Photographic lens
Thomas and Richard Willats	London	Photographic apparatus
Antoine Claudet	London	Photographic and measuring apparatus
		Screens, to modify the action of light on the various parts of the figure in taking portraits, and thus obtain artistic effects.
George Knight and Sons	London	Photographic apparatus

Table 5. Photographic manufacturers exhibiting at the Great Exhibition 1851. *Source: extracted from Photographic Exhibitions in Britain, 1839-1865 (www.peib.dmu.ac.uk)*

At the 1851 exhibition photographic equipment was included in Class 10 'philosophical instruments and processes depending on their use'. This class included photographs and some were also included in class 30 'fine arts'. Although small in number the exhibits of the British photographic manufacturers at the exhibition were extensive compared with the limited number presented by France and Germany. There was no representation of American photographic manufacturers, although American photographers did exhibit. Knight, Horne, Thornthwaite and Wood, and Claudet all exhibited several pieces of apparatus (see Table 5). The illustrated catalogue of the exhibition made little comment on the apparatus, noting only that the instruments Claudet exhibited had any novelty to them.<sup>187</sup> Four makers of photographic cameras and equipment were awarded medals.<sup>188</sup>

Photography enjoyed greater recognition and prominence at the 1862 International Exhibition. For the first time in any international exhibition it was given a distinct category under the heading 'photography and chemical manufacturers'. Hugh Diamond

<sup>187</sup> Robert Hunt, 'The science of the exhibition', *The Art Journal illustrated catalogue*, London: George Virtue, 1851, p. xii.

<sup>188</sup> *London Gazette*, no. 21254, 17 October 1851. This issue of the *London Gazette* carried a full list of all medal recipients.

claimed this was the result of the 'rapid strides with which the art has during the last few years progressed, and the multiplicity and individuality of its applications'.<sup>189</sup> Writing in his survey of photography for the official record of the International Exhibition Diamond was 'struck with the great progress in appliances illustrated in the Exhibition'. Photographic equipment from Britain was well represented with cameras and lenses being joined by an expanded range of associated accessories such as dark tents required for the wet collodion process. The major names of the period were there: Ross and Dallmeyer exhibited photographic lenses as well as cameras and equipment which they also manufactured. Rouch, Hare, Meagher, Ottewill, M'Lean and Melhuish, Cox and Solomon exhibited cameras. Smartt's, Edwards's and Leake's photographic tents were shown with Diamond noting that the latter had 'sufficient lightness and portability to allow the amateur photographer to proceed on a day's photographic tour with all his equipment in his hand.'

The eleven years between 1851 and 1862 had seen the introduction and commercialisation of the wet-collodion process. There had been a large increase in the number of professional portrait studios and an increase in the number of amateur photographers. The photographic content of the 1862 exhibition mirrored this growth with the range of apparatus targeted at these groups.

#### *Medals and endorsements*

The 1851 and 1862 exhibitions offered medals to exhibitors deemed to be showing the best goods in their respective categories. Manufacturers were quick to use the award of a medal from these and other British and international exhibitions to advertise a particular product as well as to market their business generally. From 1851 medals were regularly featured on manufacturers' letterheads and in their trade catalogues (see Illustration 17). At the 1862 exhibition the principal camera makers were all awarded

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<sup>189</sup> H. W. Diamond, '2. Photography and photographic apparatus', *The record of the International Exhibition 1862*, Edinburgh: William Mackenzie, n.d. [c1862], pp. 564-578. Diamond provides a historical survey of photography and description of the principal exhibits in the 1862 exhibition.

medals and most, including Horne, Thornthwaite and Wood, and Meagher, were quick to mention these in their advertising.

J. H. Dallmeyer's 1875 catalogue illustrated the 1862 medal awarded for photographic lenses and quoted the jurors' citation and note was also made of foreign medals including the 1867 Paris Universelle Exhibition medal.<sup>190</sup> Such was the perceived kudos of these medals that even by end of the nineteenth century medals awarded fifty years earlier were still being shown.<sup>191</sup>

The importance attached by manufacturers to all medals for marketing purposes, even those from small exhibitions, is evident from the 1865 medal controversy. At the North-Eastern London Exhibition the camera maker Patrick Meagher was awarded a medal 'for excellence of design' for his binocular camera. Ottewill, Collis and Company, George Hare and A. King wrote to the *British Journal of Photography* protesting at the award claiming that the features of Meagher's camera had long been in existence.<sup>192</sup>

The same exhibition had also seen Thomas Ross decline a medal for his photographic lenses when he noted that none of the jurors had physically examined his lenses:

Allow me to say that I beg to decline the honour which the Jurors have conferred on me. The only terms upon which I could accept of a medal would be after a *careful and scientific* examination of my productions. That such an examination was not made will appear when I state the fact, that *the key* of my show-case remained in my pocket during the examination of the Jurors, and that they consequently had not an opportunity to examining *any one lens* of the *thirty-six* exhibited by me. I *therefore decline the honour bestowed upon me, and refuse the medal*<sup>193</sup>

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<sup>190</sup> J. H. Dallmeyer, *A catalogue of telescopes, microscopes, photographic lenses, apparatus, &c.*, London: J. H. Dallmeyer, 1875.

<sup>191</sup> Ross Limited, for example, in its 1905 abridged catalogue noted the following medals awarded: London, 1851; Paris, 1867; London, 1862; Philadelphia, 1876; Paris, 1878; Antwerp, 1878; Inventions Exhibition, 1885; Sydney, 1879; Paris Exposition Universelle, 1889; Kingston, Jamaica, 1891; Chicago, 1893; Brussels, 1897; Paris, 1900.

<sup>192</sup> Ottewill, Collis & Co. *et. al.*, 'The exhibition protests', *British Journal of Photography*, no. 286, vol. 12, 27 October 1865, pp. 553-554.

<sup>193</sup> Thomas Ross, 'Declining a medal', *British Journal of Photography*, no. 279, vol. 12, 8 September 1865, p. 468.

The concern in both cases was over the poor quality of the judging process. The medal recipients believed this could affect the public perception of such medals' value. But these two instances were exceptions and the Meagher case may have had more to do with business rivalry. Generally, the quality of the exhibition or judging attracted little comment and most manufacturers were simply content to be able to promote successes to their customers.

Endorsements from well-known professional and amateur photographers were also used by photographic manufacturers of equipment and sensitised materials to promote their products. Testimonials to the effectiveness of particular goods and their use in practice, especially during formal expeditions, were relatively common alongside personal endorsements. Lens manufacturers and those making collodion were particularly active in announcing which well-known photographers used their products, reflecting the importance that optics and chemistry both had for photography. In 1875 the lens maker M. P. Tench reproduced a letter from the photographer Frank M. Good that praised his lenses:

Testimonial from Frank M Good / Jerusalem, April 9<sup>th</sup> 1875. Dear Sir, You are so constantly in my mind that I feel it a duty to write and say how much pleased I am with your Lenses. The stereos. you made for me are sufficiently rapid, and cover capitally. I am now using them on 9 by 7 plates (7 by 4½ each lens), so have ample opportunity of seeing their merit. They are famous. I have used none others since being away.<sup>194</sup>

A short extract of letter from Frank M. Good that praised Mawson and Swan's collodion was used in an advertisement soon after this in which he stated 'I can do anything with your collodion'. The Newcastle firm claimed this was typical of the communications it was constantly receiving.<sup>195</sup> It is not known whether Good received anything in return for his endorsements or even expected them to be used in such a public way. The collodion maker Maddison advertised that he had '3000 testimonials to

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<sup>194</sup> Advertisement, *British Journal of Photography*, no. 782, vol. 22, 30 April 1875, p. iv.

<sup>195</sup> Advertisement, *British Journal of Photography*, no. 787, vol. 22, 4 June 1875, p. i.

its merits' which could be inspected at his premises.<sup>196</sup> Edward Smith claimed for his bromo-iodized collodion that 'it has received the patronage of some of the first photographers in England'.<sup>197</sup>

Testimonials and endorsements from photographers were probably more influential amongst commercial photographers. A connection with royalty was the mostly highly sought connection with a resonance beyond the photographic industry to the wider public. Manufacturers, despite not being formal royal warrant holders, frequently advertised the fact that their apparatus, photographic or other, had been purchased by the royal household. Bland and Company of London described themselves as 'photographic instrument makers to the Queen'.<sup>198</sup> C. H. Chadburn of Liverpool, when advertising their cameras, apparatus and collodions, described itself as 'optician & instrument maker to H.R.H. Prince Albert'.<sup>199</sup> Mayfield, Cobb and Company Limited of London noted when advertising its Woolwich brand dry plates in 1888 that 'these plates are now in constant use by some members of the royal family'.<sup>200</sup> Other manufacturers, such as Thomas Ottewill who had supplied photographic goods to the royal household, failed to capitalise on this association in his advertising. Changes in legislation limited the commercial exploitation between manufacturing and retailing firms and their royal links, real or imaginary, during the 1880s.

## Summary

The origins of the photographic manufacturing industry were firmly rooted in the scientific instrument, optical and chemist trades. By the late 1840s and early 1850s as

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<sup>196</sup> Advertisement, *British Journal of Photography*, no. 118, vol. 7, 15 May 1860, p. xi.

<sup>197</sup> Advertisement, *British Journal of Photography*, no. 143, vol. 8, 1 June 1861, p. vi. In this case the use of the word 'first' meant leading.

<sup>198</sup> Advertisement, *British Journal of Photography*, no. 112, vol. 7, 15 February 1860, p. iii.

<sup>199</sup> Advertisement, *British Journal of Photography*, no. 132, vol. 7, 15 December 1860, p. iii.

<sup>200</sup> Advertisement, *British Journal of Photography*, no. 1486, vol. 35, 26 October 1888, p. xi.

the market for equipment and sensitised materials grew, with demand largely from professional photographers, so specialist manufacturers and retailers were established. The majority of these were based in London. The introduction of the wet-collodion process in 1851 and the removal of any potential threat of litigation from Beard and Talbot resulted, shortly afterwards, in the dramatic growth of studios and a consequential rise in demand for equipment and materials. At the same time the new process gave an impetus to the growth of amateur photography which created a desire to exchange information and exhibit, which supported the establishment of photographic societies from the early 1850s. During this period, the professional market was the larger and most important. After a period of stagnation from the mid-1860s changing photographic technology around sensitised materials renewed the growth of amateur photography and paved the way for the development of the snapshotter. The further refinement twenty years later of the definition and status of the amateur during the 1890s was a reflection of the rapid growth of the market. This had a consequential impact on the demand for photographic goods.

## Chapter 4. The decades of expansion

***“the whirling sound of machinery in motion apprises us of the fact that we are in a veritable factory” (1889) <sup>1</sup>***

### Technical developments

#### *Background*

The period between the 1870s and 1890s saw a growth in the rate of technical innovations within photography. This both stimulated and met the demand from a growing consumer market. The most important of these were the changes to photographic emulsions during the 1870s, which resulted in the introduction of significantly improved commercially-made dry plates. This presented an unparalleled opportunity for camera manufacturers to develop new forms of camera, which they were quick to do. Smaller and more portable designs of camera were introduced as a direct consequence of the change to plates. Celluloid film in flat sheets and later roll film also made possible new designs of camera that a waiting market, increasingly dominated by the snapshotter, was keen to buy. For both sensitised goods and camera manufacture the introduction of standardisation to the manufacturing process and techniques of mass-production ensured that prices fell over the period and this supported new markets for photography.

#### *Dry plates*

The wet collodion process had offered many advantages over the daguerreotype and

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<sup>1</sup> Taken from a description of W. Watson and Sons camera making factory published in the *British Journal of Photography*, no. 1516, vol. 36, 24 May 1889, pp. 346-347.

calotype processes in terms of sensitivity, reliability and the quality of the image it produced. The need to expose and process plates while moist before they lost their sensitivity continued to be a serious disadvantage, although many photographers overcame this obstacle to photograph in difficult climates away from a permanent dark room. There had been attempts to produce dry plates equal in sensitivity to wet plates which could be processed sometime after exposure. These had mainly appealed to amateurs and only the Hill Norris plate had seen any commercial success.

This changed in the early 1870s. Perhaps sensing this, the Hill Norris's Patent Dry Plate Company, which had seen few serious competitors during the 1860s, reduced the price of its dry collodion plates by between 15 and 20 per cent in June 1871.<sup>2</sup> Separately there were a series of announcements in the photographic press that suggested to photographers that a viable alternative to wet collodion might soon be available. The London photographic retailer Joseph Solomon announced the availability of a collodion-bromide dry process and in September 1871 Richard Leach Maddox described an experiment with gelatine-bromide which heralded the start of further experiments that led to large-scale commercial dry plate manufacturing.<sup>3</sup> Like Scott Archer in 1851 Maddox did not patent his process. This was a significant factor in the chemistry behind it being exploited and, more importantly, being further refined by others who commercialised it.

The commercial production of gelatine emulsions for photographers to coat and prepare their own dry plates started with John Burgess. He advertised a bottled emulsion from July 1873. The emulsion was not particularly sensitive and achieved little commercial success.<sup>4</sup> The following year Richard Kennett began selling small-format ready made gelatine silver-bromide plates on a limited scale. Peter Mawdsley's Liverpool Dry Plate

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<sup>2</sup> Advertisement, *British Journal of Photography*, no. 579, vol. 18, 9 June 1871, p. vii.

<sup>3</sup> R. L. Maddox, 'An experiment with gelatino-bromide', *British Journal of Photography*, no. 592, vol. 18, 8 September 1871, pp. 422-423.

<sup>4</sup> Advertisement, *British Journal of Photography*, no. 689, vol. 20, 18 July 1873, quoted in J. M. Eder, *The history of photography*, New York: Columbia University Press, 1945, p. 424.



and Photographic Printing Company introduced gelatine dry plates in larger quantities starting with Kennett's plates in 1876 and Bennett's in 1878 (see Illustration 18).<sup>5</sup> These represent the start of commercially viable dry plate manufacturing with a product that amateurs readily accepted.

By 1879 four major gelatine dry plate manufacturers were issuing prepared glass plates which dominated the market: the Liverpool Dry Plate Company of Liverpool, Mawson and Swan of Newcastle, Wratten and Wainwright of London, and Samuel Fry and Company of Kingston. By the end of that year it was not just amateurs that were using dry plates; professional studios had also started moving away from traditional wet collodion plates. The *British Journal of Photography* noted in its review of the year in 1879:

when several manufacturers had placed gelatine plates commercially in the market, one by one the more enterprising professional photographers commenced to give them a trial, with the result that during the dark weather of last winter they were exclusively used in several studios to the entire displacement of the [collodion] bath.<sup>6</sup>

The tremendous growth of demand from amateurs and professionals caused the journal to further remark: 'so rapidly is this industry spreading that it has been said there will soon be more manufacturers of plates than consumers'.<sup>7</sup>

Although not an emulsion support in the way that glass was, gelatine had become important as a medium for suspending light-sensitive halides for coating onto glass and celluloid from the mid-1850s. It was not until Richard Leach Maddox's dry plates using a gelatine silver-bromide emulsion that its use as a support for light-sensitive emulsion

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<sup>5</sup> John Ward, 'Dry plate negatives: gelatine' in John Hannavy (ed.), *Encyclopedia of nineteenth century photography*, New York: Routledge, 2008, pp. 438-439; J. M. Eder, *The history of photography*, New York: Columbia University Press, 1945, p. 425.

<sup>6</sup> 'Summary of the past year', *British Journal of Photography*, no. 1025, vol. 26, 26 December 1879, pp. 611-612.

<sup>7</sup> 'Summary of the past year', *British Journal of Photography*, no. 1025, vol. 26, 26 December 1879, p. 611.

became increasingly widespread.<sup>8</sup> Where Richard Hill Norris procured his supply of gelatine for the dry plates which he introduced in 1856 is unclear. By the mid-1880s much of Britain's photographic gelatine was being supplied by George Nelson, Dale & Company and had been for some time. The firm had been established in 1837 and sold gelatine internationally, mainly for cooking purposes. It had an extensive manufacturing plant at Emscote Mills, Warwick, and a London sales office.<sup>9</sup> The firm made its own photographic gelatine that was available for 'retail from all dealers in photographic materials, wholesale from the manufacturers'.<sup>10</sup> During a factory visit by the *Photographic News* in 1880 the writer noted that Professor Eder, a respected Austrian photographic chemist, had given their gelatine 'a high place in his list of gelatines fit for photographic purposes', and had noted that that it is 'very generally preferred by photographers'.<sup>11</sup> George Nelson, Dale & Company, in an example of vertical integration, established its own company, the Warwick Dry Plate Company, to produce sensitised plates, about which it boasted 'the only dry plate manufactured exclusively with British gelatine'.<sup>12</sup>

The growing demand for dry plates was taken up by the entry of increasing numbers of small-scale manufacturers. Most of these were hand producing small quantities of plates. This method of production was not unusual and even the larger firms such as Wratten and Wainwright were producing plates using teapots and hand methods of emulsion coating. The company which had been established in 1877 had introduced dry collodion plates the same year, followed by their gelatine dry plates under the 'London' brand name in early 1878.

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<sup>8</sup> J. M. Eder, *The history of photography*, New York: Columbia University Press, 1945, pp. 373-374; 422-424.

<sup>9</sup> The archives of George, Nelson, Dale & Co. Ltd., are held at Warwickshire Country Record Office, Warwick, reference CR1294. The business was established in 1837 as timber merchants and gelatine manufacturers. It became a limited liability company in 1887 and was still in existence in 1965.

<sup>10</sup> Advertisement, *British Journal of Photography*, no. 1308, vol. 32, 29 May 1885, p. iii.

<sup>11</sup> J. R. Johnson, 'Nelson's gelatine', *Photographic News*, no. 1142, vol. 24, 23 July 1880, pp. 356-357.

<sup>12</sup> Advertisement, *British Journal of Photography*, no. 2487, vol. 55, 3 January 1911, p. xiii.

Mechanisation and mass-production was essential if burgeoning demand was to be met. By the middle of 1880 the *British Journal of Photography* reported that 'sensitising and washing the emulsion, cleaning, coating, and even drying the plates are all now performed if not by machinery at least by mechanical means as distinguished from the old style of hand-work'.<sup>13</sup> This description may have applied to a few large manufacturers but it is unlikely it applied to the majority of plate makers. The journal acknowledged this in an editorial in March 1881 which noted 'it is no secret that the apparently delicate operation of coating gelatine plates is now, and has been for some time, performed by "machinery" in more than one of the large establishments whence they are issued'. Most manufacturers remained cottage industries and continued to be so until a smaller number of larger firms began to dominate the industry from the later 1890s.<sup>14</sup>

Manufacturing was not confined to England. In Scotland there were at least two firms active as dry plate manufacturers of which one enjoyed commercial success. The smaller and short-lived was the North British Dry Plate Company Limited which was established in 1883 and had been dissolved by 1888.<sup>15</sup> The other was F. W. Véral and Company, based in Cathcart, near Glasgow. It had been established around 1887 and remained in business until around 1912, achieving medal success in Edinburgh and Glasgow. It is likely that its plates were mainly sold locally.<sup>16</sup>

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<sup>13</sup> 'Mechanical arrangements in connection with the preparation of dry plates', *British Journal of Photography*, no. 1043, vol. 27, 30 April 1880, pp. 205-206.

<sup>14</sup> 'Coating gelatine plates by machinery', *British Journal of Photography* no. 1090, vol. 28, 25 March 1881, pp. 141-142.

<sup>15</sup> National Archives of Scotland, BT2/1264. North British Dry Plate Company Limited. The firm was established to 'carry on the business of manufacturing photographic dry plates, enlarging photographers, silver printing from negatives, as also developing photographic plates, the preparing of sensitised paper for carbon and silver photographic work'.

<sup>16</sup> Advertisement, *Photographic News*, no. 1503, vol. 31, 24 June 1887, p. viii; *Glasgow Post Office directories*.

### *Mechanised coating of plates*

In 1883 only two manufacturers, Mawson and Swan of Newcastle and Samuel Fry of Kingston, were known to coat plates mainly by machinery.<sup>17</sup> Two patents by George Eastman in 1879 and 1880 had directly addressed the machine coating of dry plates and his machine was almost certainly in use by these firms.<sup>18</sup> Eastman had exchanged manufacturing knowledge with Mawson and Swan after it had supported him when his fledgling plate manufacturing business suffered a problem with poor gelatine and the firm had offered him a work placement within its factory. By 1885 there were over fifty-eight companies and individuals advertising the manufacture of dry plates and films, with some making plates of different speeds and qualities. It was inevitable that there would be some rationalisation with smaller makers and those unable to mechanise and, therefore compete on price and quality, failing commercially. Peter Mawdsley, for example, who had been one of the earliest dry plate manufacturers joined forces with Frederick York in London and noted that 'arrangements are made for producing large quantities'.<sup>19</sup> Other firms ceased production.

During the 1880s and 1890s several important new entrants appeared in the market and a number of existing firms expanded their factories. For example, in 1879 Alfred Harman added the coating and selling of plates to his photographic printing business. He erected a factory for the manufacture of dry plates in 1883 and built a new factory in 1895.<sup>20</sup> He began trading as the Britannia Works Company in 1886 and the business became Ilford Limited in 1900. R. W. Thomas opened a new dry plate factory in 1884 that was 'capable of unlimited expansion, [and] is calculated for a present output of 1,000 dozen whole plates daily'. He added a factory extension in 1889 which could turn

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<sup>17</sup> 'Coating plates with gelatine emulsion. First article', *Photographic News*, no. 1271, vol. 27, 12 January 1883, p. 17-18; 'On the coating of plates with gelatine emulsion. Second article', *Photographic News*, no. 1273, vol. 27, 26 January 1883, pp. 49-50. The second article named Mawson and Swan and Fry and discussed their methods.

<sup>18</sup> British patent no. 2967 (22 July 1879) and British patent 3006 (21 July 1880). The 1880 patent was discussed in 'Eastman's apparatus for coating plates with emulsion', *Photographic News*, no. 1305, vol. 27, 7 September 1883, p. 564.

<sup>19</sup> Advertisement, *Photographic News*, no. 1128, vol. 24, 16 April 1880, p. vi.

<sup>20</sup> R. J. Hercocck and G. A. Jones, *Silver by the ton. A history of Ilford Limited 1879-1979*, p. 26, 37.

out upwards of 5000 quarter-plates per day.<sup>21</sup> Mawson and Swan erected a new factory for dry plate manufacturing in 1885, Wratten and Wainwright opened a new factory in Croydon in 1890 which included a coating machine made for them by Smith of Zürich and F. W. Véral and Company of Glasgow built a new dry plate works with machinery including a freezing plant for summer working.<sup>22</sup> Elliott and Fry, which started manufacturing activities by making photographic papers, expanded and erected a new factory in 1893. It secured the services of J. B. B. Wellington, who had worked for three years with the Eastman Company, to manage their new dry plate department. It added a further factory in 1896.<sup>23</sup>

Marion and Company, which had taken over its own dry plate manufacturing from Alfred Harman and the Britannia Works Company, opened a newly built factory in Southgate, London, in 1887, although it continued to coat plates by hand. A new factory was designed by the company's manager, Alexander Cowan, and made use of James Cadett's coating machine. The machine could coat 720 whole-plates per hour and larger quantities of smaller plates, for example, 2,800 quarter-plates per hour (see Illustration 19).<sup>24</sup> The production of dry plates was increasingly concentrated with larger firms that were using factory methods to mass-produce plates. Small manufacturers disappeared from the market place as they were unable to leverage economies of scale for production and to compete on price. The larger plate manufacturers developed their brands to retain customers.

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<sup>21</sup> Advertisement, *British Journal of Photography*, no. 1265, vol. 31, 1 August 1884, supplement; *Photographic News*, no. 1353 vol. 28, 1 August 1884, supplement; Advertisement, *British Journal of Photography*, no. 1512, vol. 36, 26 April 1889, p. xiii. Thomas's plates were sold under the Pall Mall name.

<sup>22</sup> Advertisement, *Photographic News*, no. 1378, vol. 29, 30 January 1885, supplement (Mawson and Swan); Advertisement, *British Journal of Photography*, no 1304, vol. 32, 8 May 1885, p xi (Véral and Company).

<sup>23</sup> 'Photographic Industries. The photographic factory of Messrs. Marion & Co.', *British Journal of Photography*, no. 1408, vol. 34, 29 April 1887, pp. 260-261; 'Mr J. J. B. Wellington', *The Photographer's Record*, no. 10, vol. 1, June 1893, p. 2; 'Editorial', *The Photographer's Record*, no. 16, vol. 1 (NS), October 1896, p. 4.

<sup>24</sup> 'Manufacture of photographic sensitive plates', *Scientific American supplement*, no. 647, vol. 25, 26 May 1888, pp. 10336-10337. The report originally appeared in *The Engineer*.

Amongst the new entrants to the market were the Imperial Dry Plate Company in 1892, Wellington and Ward in 1896 - which J. B. B. Wellington started after he left Elliott and Fry - and started by manufacturing photographs papers and gelatine film, and the Gem Dry Plate Company in 1895 all of which Ilford Limited would eventually take over.<sup>25</sup>

Cadett and Neall was a significant entrant into dry plate manufacture and quickly became one of Britain's largest. It was established at Ashstead, Surry, in August 1892 as a collaboration between James Cadett and Walter Neall. Cadett had a technical background and had invented a plate and film coating machine in 1886 that was used widely in the industry.<sup>26</sup> The firm grew rapidly and by October 1892 it reported that its plate sales were more than doubling every month.<sup>27</sup> Between 1895 and 1896 sales increased by 52 per cent and by February 1898 the firm claimed sales of millions of plates and the largest sales in the United Kingdom. Because of this the firm enlarged its Greville Works in late 1892 and in 1893 built its Crampshaw works and these changes doubled its production capacity. These were further enlarged in 1896, and in 1898 its Victoria works was built for paper and film production.<sup>28</sup>

Cadett's plate-coating machines, which were widely acknowledged as superior, were manufactured by the London engineering firm of R. W. Munro and sold for £175.<sup>29</sup> They were in use by several large plate manufacturers including the Britannia Works Company, which rented the machines for £100 per annum. Cadett and Neall converted

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<sup>25</sup> The National Archives, Kew, BT31 32528/182744 (Wellington and Ward); The National Archives, Kew, BT31 6083/43049 (Gem Dry Plate Company).

<sup>26</sup> British patent no. 9886 (31 July 1886) together with British patent no. 13,725 (10 October 1887) and British patent no. 5650 (2 April 1889).

<sup>27</sup> 'Ourselves', *Dry Plates*, no. 3, vol. 1, November 1892, p. 1. The firm reported: 'we may add that our sales are more than doubling each month, September showing an increase of 100 per cent. over August, and October nearly 150 per cent. over September. This exclusive of export orders, and in the most unfavourable season of the year.'

<sup>28</sup> This data is taken from *Dry Plates. A Magazine devoted to the interests of professional & amateur photographers*, Ashstead: Cadett & Neall, 1892-1897. This was a house magazine published by the firm for customers.

<sup>29</sup> R. W. Munro Ltd., *R. W. Munro Ltd. Centenary 1864-1964. A century of a family enterprise in instrument making and precision engineering*, London: R. W. Munro, 1964.

to a limited company in 1897. It was acquired by Kodak Limited in 1904, a move prompted by Kodak's need to secure expertise in the mass-production of plates and films and to remove a significant competitor from the market in order to boost its own position.<sup>30</sup>

### *Prices*

The mechanisation of sensitised dry plate manufacturing from the 1880s, along with strong competition between manufacturers, had the benefit for the consumer of reducing prices. As early as 1880 a correspondent to the *British Journal of Photography* was claiming that the cost of gelatine dry plates was too high for general use in the photographic portrait studio.<sup>31</sup> The evidence does not support this. Richard Kennett's dry plates, which were amongst the first available, were advertised at 3s 0d per dozen in quarter-plate size in 1880. By 1882 the average price across ten manufacturers was just under 2s (ranging from 1s 6d and 2s 6d), 1s 10d in 1885 (ranging from 1s 3d to 2s 6d) and 1s in 1913.<sup>32</sup> Prices continued to preoccupy correspondents to the photographic press on aspects ranging from the inconsistency of pricing between manufacturers, the general cost of plates, observations on the general reduction in price of plates, and the tactics of manufacturers to boost sales. In 1886 *Photographic News*, in a rant against worker exploitation and the relationship between the manufacturer and the 'commercialist', noted that one manufacturer was offering 'dry plates at 6d. per dozen, packed in boxes and labelled with your own label!' It speculated that this closely represented the cost of production - but only if the factory was mechanised and 'the maximum labour' was extracted from workers. It opined that the quality of the plates would suffer through using such methods.<sup>33</sup> Following this up two weeks later, in more

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<sup>30</sup> See: Michael Pritchard, 'Cadett and Neall Dry Plate Ltd.' in John Hannavy (ed.), *Encyclopedia of nineteenth century photography*, New York: Routledge, 2008, pp. 234-235.

<sup>31</sup> Free Trade, 'Correspondence. The price of gelatine plates', *British Journal of Photography* no. 1069 vol. 27, 29 October 1889, pp. 526-527.

<sup>32</sup> Compiled from advertisements in the *British Journal Photographic Almanac 1880*, *British Journal of Photography* and from 'News and Notes. Reduction in plate prices', *British Journal of Photography*, no. 3176, vol. 68, 18 March 1921, p. 160.

<sup>33</sup> 'Notes', *Photographic News*, no. 1450, vol. 30, 11 June 1886, pp. 375-376.

measured tones, the *News* calculated that 8½d. per dozen quarter-plates was realistic 'assuming that the glass is tolerable, and that the films are thick; but this makes no allowance for profit for the capitalist'.<sup>34</sup>

Date	Average price of one dozen quarter-plates
Before 16 June 1913	1s 0d
16 June 1913	1s 3d
13 March 1915	1s 6d
29 February 1916	1s 10d
1 March 1917	2s 3d
5 February 1918	2s 9d
1 August 1918	3s 8d
11 March 1919	3s 0d
16 February 1920	3s 6d
14 March 1921	2s 9d

Table 6. The average price of dry plates 1913-1921. *Source: British Journal of Photography, 18 March 1921, p. 160.*

S. H. Wratten in discussing the manufacturing of dry plates sounded a cautionary note:

the question of prices and their possible reduction is bound to arise in the near future as the possibilities of over-production already loom in the distance. A great reduction must not be looked for, as the manufacture of dry plates has yet to free itself from many uncertainties, which, combined with the increasing cost of raw materials, diminish the possibility of a lessened price-list.<sup>35</sup>

Although there was a reduction in the number of smaller companies producing dry plates this had been more than compensated by the growth of other firms and over-production was not an issue for most of the period up to the First World War. Demand seemed to be keeping slightly ahead of supply. At Ilford Limited, for example, profits rose to £54,000 in 1901, dropping to £14,000 in 1907 for a variety of reasons not linked to demand, before climbing steadily to £33,000 in 1913. At Kodak with its more

<sup>34</sup> 'The price of dry plates', *Photographic News*, no. 1451, vol. 30, 25 June 1886, pp. 401-402

<sup>35</sup> S. H. Wratten, 'The manufacture of dry plates', *British Journal of Photography*, no. 2319, vol. 51, 14 October 1904, pp. 885-886.



expansive business profits climbed continually to 1913. The First World War with its impact on raw materials and manpower affected prices more significantly as Table 6 shows.

### *Quality*

As prices fell the relationship between price and the quality of the plate became of greater concern, particularly for the commercial portrait studio. The *Photographic News* having tested English and plates produced in continental Europe felt that the English plates were generally coated with a thinner layer of emulsion and that the quality and sensitivity of continental plates was higher than the English.<sup>36</sup> There were no objective tests made of quality so its conclusion was at least partly subjective. More rigorous production methods because of the mechanisation of the manufacturing process helped maintain consistency between batches and several manufacturers began to mark plates with their batch number and tested each batch for sensitivity before it was sold. The adoption of the Hurter and Driffield measure of sensitivity, initially by Marion and Company in 1891 and then subsequently by others, marked on the plate box began an important process of standardisation which allowed comparison between brands.

A principal of Wratten and Wainwright, S. H. Wratten, in a paper read before Croydon Camera Club in 1904 noted:

I [do not] think any great new departure in dry-plate manufacture is likely to occur. Like the bicycle, the dry plate is rapidly approaching a regular style, the prevailing indication being chiefly indicative of an extended use of the fastest ordinary and colour sensitive plate, and a neglect of the slower plates even for purposes where their design makes them most efficient.<sup>37</sup>

From a technical perspective Wratten's analysis was correct. But he did not foresee the continued expansion of the amateur market for sensitised goods and the demand, by the snapshotter, for films rather than plates, which is described later in this chapter.

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<sup>36</sup> 'The price of dry plates', *Photographic News*, no. 1451, vol. 30, 25 June 1886, pp. 401-402.

<sup>37</sup> S. H. Wratten, 'The manufacture of dry plates', *British Journal of Photography*, no. 2319, vol. 51, 14 October 1904, pp. 885-886.

### *New chemistry*

Alongside the expansion of plate making was the introduction of ready-made developers, usually in powdered form, to support them. These were aimed mainly at the amateur and were introduced from the late 1880s as developments in chemical manufacturing had progressed. Developers were made commercially by manufacturers with some retailers also producing their own from the raw ingredients and packaging them. Eikonogen was one of the most popular and other organic developers quickly joined it so that by 1895 Otto Schölzig noted that he was the agent for 'Dr Andressen's [sic] developers – rodinal, eikonogen, amidol, metol, glycin, hydroquinone, pyro in bulk and cartridges, and also tone-fixing cartridges'.<sup>38</sup> Many of these compounds remained popular well into the twentieth century.

More specialised substances to support dry plates were also produced. Lichtenstein and Company of Silvertown, London, manufactured caramel for backing plates and this was supplied directly to commercial plate makers. It could also be purchased by amateurs through photographic dealers.<sup>39</sup> Methylated spirit was also used extensively in the manufacturing of photographic plates and papers and the Board of Trade in 1911 reported that the quantity used in photography for the year ending 31 March was 42,294 gallons, against 42,077 gallons the previous year, suggesting that plate manufacturing was still expanding.<sup>40</sup> Chemical waste was frequently recovered with professional portrait studios gaining the greatest benefit from using the services of firms such as R. Pringle and Company to recover silver from chemical waste.<sup>41</sup>

### *The impact of dry plates on equipment*

The introduction of dry plates had a marked effect on the type of equipment photographic manufacturers produced. I would argue that this was in direct response to

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<sup>38</sup> 'News and Notes', *British Journal of Photography*, no. 1818, vol. 42, 8 March 1895, pp. 152-153.

<sup>39</sup> *British Journal of Photography*, no. 1957, vol. 44, 5 November 1897, p. 706.

<sup>40</sup> 'News and Notes', *British Journal of Photography*, no. 2681, vol. 58, 23 September 1911, p. 733.

an amateur market that wanted to take advantage of the benefits that dry plates, and better quality photographic emulsions, offered. The most obvious effect was the introduction of smaller, more portable, cameras. Dry plates no longer needed to be accompanied by the sensitising and processing equipment that the wet collodion process had required and emulsions were becoming more sensitive with improved physical characteristics such as small grain. The overall size of the camera was determined by the plate size that a photographer wanted to use and for amateur use larger plates were no longer a necessity from a technical perspective. As portability proved to be attractive to amateurs smaller plates began to be preferred compared to whole-plate (6½ x 8½ inches) with quarter-plates (3¼ x 4¼ inches), 5 x 4 inch and half-plates (4½ x 6½ inches) becoming the preferred sizes.

The ability to make enlargements from these smaller sizes either oneself or through commercial firms of enlargers which had started to operate mainly for the professional photographer from the 1860s, had also made smaller plates more acceptable for the amateur, although for many contact prints remained perfectly adequate. Commercial portrait studios continued to rely on larger plates as there was no need to use smaller cameras or a requirement for portability within the studio. For portraiture larger plates continued to offer advantages for the retouching of the negative, a requirement which amateurs did not generally have.

### **The hand camera**

The introduction of commercially made dry plates supported the introduction of a new form of camera that, in turn, was to prove remarkable in attracting a new class of amateur photographer. The commercial introduction of celluloid as a base for

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<sup>41</sup> 'Metropolitan Industries. The gold and silver works of R. Pringle & Co.', *British Journal of Photography*, no. 1425, vol. 34, 26 August 1887, p. 537.

photographic emulsion in 1890 further enhanced the position of this style of camera.<sup>42</sup> The new design of camera was referred to by several names with 'detective' and 'hand' being the most common. It appeared in several designs: box form, collapsible-strut and folding hand and stand.<sup>43</sup> As early as 1874 the *British Journal of Photography* was describing 'light, compact and portable' cameras as being preferable to larger ones although it acknowledged that this implied that a dry process was required.<sup>44</sup> Commercially-made dry plates acted as a catalyst for the introduction of a camera specifically designed to use them.

For the amateur, the hand or 'detective' camera began to be adopted as a more portable camera by serious amateurs and by a new class of photographer, the snapshotter, from the mid-1870s.<sup>45</sup> The changes in sensitised goods in terms of their improved sensitivity and generally better quality were crucial in supporting the development of smaller, more portable, cameras. There had been a few small hand-sized cameras during the 1850s and 1860s but these had limited acceptance with their uptake hampered by poor sensitised materials and the inability to produce enlargements easily from small negatives until the late 1870s.<sup>46</sup> Marion's Metal Miniature which appeared in 1884 was a successor to those earlier cameras – a miniature rather than a detective or hand camera – the smallest size producing ¾ x ¾ inch negatives. It achieved little success.

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<sup>42</sup> A survey of the hand camera was given in a lecture by the London photographic retailer James A. Sinclair at Croydon Camera Club in 1911. It was published as 'A brief history of the hand-camera and its possibilities', *British Journal of Photography*, no. 2693, vol. 58, 22 December 1911, pp. 971-974.

<sup>43</sup> Brian Coe, *Cameras. From daguerreotypes to instant pictures*, London: Marshall Cavendish Editions, 1978. Coe defined these three physical forms of the camera.

<sup>44</sup> 'Pop-Guns', *British Journal of Photography*, no. 756, vol. 21, 30 October 1874, pp. 515-516. This article discussed the members of the Amateur Field Club who rarely used plates exceeding 8 x 5 inches.

<sup>45</sup> The terms 'detective' and 'hand' camera were used interchangeably during the 1880s. The *Oxford English Dictionary* records the former term in the *British Journal of Photography* in 1881 and the latter term in the *Photographic News* in 1889 and meaning a hand camera adapted for taking instantaneous photographs. The term 'snapshotter' is noted from 1899 and 'snap-shottist' from 1891 with the term 'snap-shot' from 1894.

<sup>46</sup> Examples include Thomas Skaife's Pistolgraph (1859) which was the best known of these and was copied in a modified fashion by Ottewill (1860) and the French-made Bertsch metal cameras (1860). After these there was a hiatus in the production of miniature cameras until the 1880s.

### *The box form detective camera*

Thomas Bolas demonstrated to the Photographic Society a new design of camera he had constructed, which was described in the Society's *Journal* in January 1881 (see Illustration 20).<sup>47</sup> The box form camera, which he called a detective camera, contained twenty-six plates and measured twelve inches square by five inches deep, although Bolas acknowledged that this could be considerably reduced if necessary. He also showed several views of London life which he had taken with the camera.<sup>48</sup> Bolas further refined the camera and had the camera maker Mr Collins of St John's Wood reduce the size and change some of the controls to make it more suitable as 'an ordinary tourist's camera'.<sup>49</sup> The camera was the subject of a provisional patent in November the same year.<sup>50</sup> It is significant that Bolas saw the market for the camera as tourists and not amateur photographers, although the two were not exclusive. The camera was not successfully commercialised but other manufacturers in Britain and the United States saw its possibilities. A number introduced variants of Bolas's basic design, reducing its size and refining its operation. American designs were generally more numerous and more successful. An editorial in 1886 provided the *British Journal of Photography* with an opportunity to define the camera:

The detective camera may be described as an exceedingly portable quarter-plate, or 5 x 4 camera set in a neat case, usually covered with leather, and got up in such a style as to deceive the unsuspecting passer-by as to its real nature.<sup>51</sup>

Walter D. Welford writing in 1887 noted that the design was 'one form of the now

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<sup>47</sup> Thomas Bolas (1848-1932) was originally a chemist and became a scientific journalist. He edited *Photographic News* and wrote a number of photographic books. See: Michael Pritchard, 'Thomas Bolas' in John Hannavy (ed.) *Encyclopedia of nineteenth century photography*, New York: Routledge, 2008, pp. 169-170.

<sup>48</sup> T. Bolas, 'The detective camera', *Journal of the Photographic Society*, no. 4 vol. 5 (N.S.), January 1881, pp. 59-60.

<sup>49</sup> T. Bolas, 'Modifications of the detective camera', *Photographic News*, no. 1185 vol. 25, 20 May 20 1881, p. 231.

<sup>50</sup> British patent number 4823 (3 November 1881) granted to T. Bolas for Cameras; shutters; change boxes.

<sup>51</sup> 'Detective cameras', *British Journal of Photography*, no. 1340, vol. 33, 8 January 1886, p. 17. The journal also noted that 'it is in the United States of America that detective cameras have, up to the present time, received their highest development'.

somewhat numerous disguised cameras'.<sup>52</sup> When the next edition of Welford's compendium of photographic apparatus came out in 1891 he noted that the hand camera had seen 'greater progress, greater ingenuity, and more patterns than in any other branch, to say nothing of the enormous increase in the actual number using them' and that 'the number...available had risen to seventy or eighty different forms'. It had moved beyond being a disguised or novelty camera. Of the designs available the majority were of the box form type – the direct successor to Bolas's original design, although the strut and stand designs were also becoming available.<sup>53</sup> The sales of these cameras are difficult to determine but as an example of one model W. Butcher and Son claimed sales of over 800 of its Primus hand camera in 1896.<sup>54</sup>

#### *The Kodak camera*

Although the initial adoption and subsequent improvement to Bolas's detective camera design was slow the introduction of the Kodak to Britain in 1888 marked a turning point (see Illustration 21). It improved the basic detective camera design and it made use of film rather than plates. In the words of Welford: 'when the "Kodak" first appeared it "struck oil" instantaneously'.<sup>55</sup> He ascribed its success to the fact that it was aimed at those with no knowledge of photography and it was enterprisingly and persistently advertised.

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<sup>52</sup> Henry Sturmev (ed.), *The Photographer's Indispensable Handbook*, London: Iliffe and Son, 1887, pp. 60-68, noted the Parcel Detective (Marion and Co.), Pocket Ebonite (J. T. Mayfield and Co.), Newton's Detective (H. Newton and Co.), Jubilee Detective (Shew and Co.) Watson's Detective (W. Watson and Sons) all adopted the basic Bolas look and, in some cases, design.

<sup>53</sup> Henry Sturmev (ed.), *Photography Annual 1891*, London: Iliffe and Son, 1891, p. 233.

<sup>54</sup> Advertisement, *The Photogram*, no. 28, vol. 2, June 1896, n.p.

<sup>55</sup> Henry Sturmev (ed.), *Photography Annual 1891*, London: Iliffe and Son, 1891, p. 292.

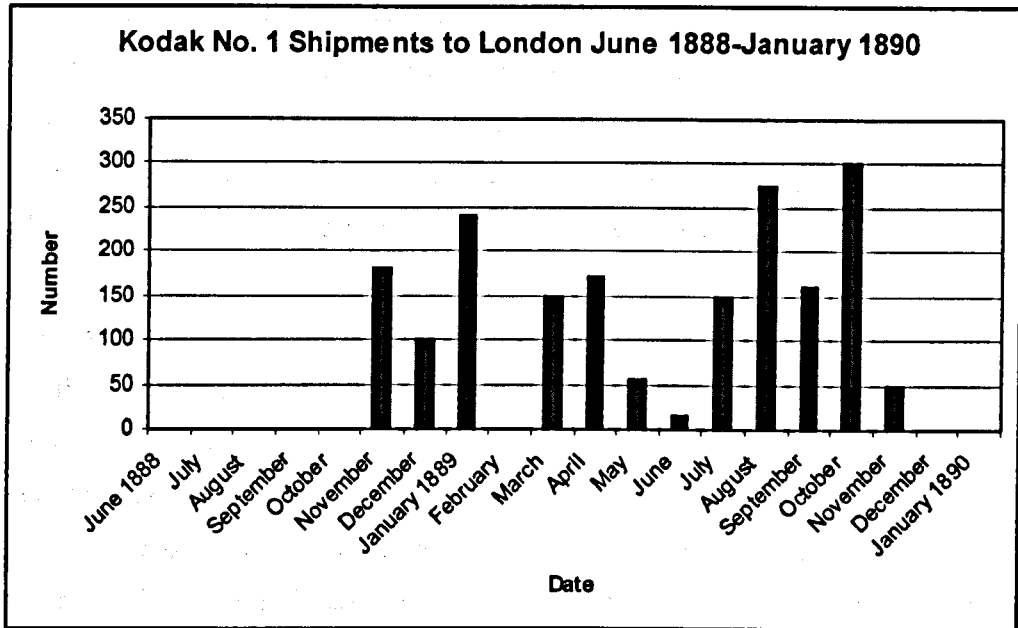


Figure 5. Shipments of the Kodak No. 1 camera to London June 1888 to January 1890. Sales would have been split between Britain and Europe. *Source: Eastman Kodak Company archive, George Eastman House.*

The Kodak was launched in the United States in July 1888 and limited supplies reached Britain in October. It quickly received positive reviews from the photographic press. The *Photographic News* noted that the Kodak was ‘so distinct and considerable an advance of the detective camera already introduced’.<sup>56</sup> Its advantages lay with its size which was truly hand-sized at 3¼ x 3¼ x 6 5/8 inches, and it contained a roll holder with sufficient stripping film for one hundred exposures giving negatives 2½ inches in diameter.

Although Kodak claimed the camera would be of use to ‘accomplished’ photographers it was primarily targeting a new class of photographer: ‘those who do not wish to devote the time and attention which is really necessary to practise photography, but who desire to obtain records of a tour, or to obtain views for other purposes’. A. R. Dresser from the company noted: ‘of course it is only for detective work, pure and simple, and must

<sup>56</sup> ‘The detective camera of the Eastman Company: The “Kodak”’, *Photographic News*, no. 1567, vol. 32, 14 September 1888, pp. 578-579.

be worked in a good light'.<sup>57</sup> For the tourist this was not a big constraint. However, the camera was not cheap at five guineas (£5 5s), equivalent to a months wages for most people, and processing and reloading cost £2 10s, all of which put it beyond the reach of the working class and a mass market. Despite good reviews and practical advantages sales in Britain, as Figure 5 suggests, were relatively small.

Along with the camera, the Eastman Company introduced a service to develop and print the films. For the first time, in a commercially organised way, this removed the photographer from needing any knowledge of photographic processing and printing. In an instant it democratised the technology of picture making. The user could simply point and shoot the camera and, provided that the general instructions that came with the camera had been followed, secure reasonable results. When all the exposures had been made the camera was returned, with the film inside it, to Kodak for processing and printing. The camera was returned re-loaded with film ready to start again. In Britain, developing and printing was initially carried out at the company's Oxford Street premises and by mid-1891 the activity had moved to the Eastman Company's newly opened Harrow factory.

The Eastman Company launched a marketing campaign to promote the Kodak. It was advertised in popular illustrated magazines such as *The Graphic* with the slogan 'You press the button. We do the rest'. Variants of this were also used. For photographic societies and groups the company's directors and employees gave demonstrations of the camera as part of a wider introduction to the company's products.<sup>58</sup> The Eastman Company made changes to the lens and shutter arrangement of the camera in 1889 and it was formally designated the No. 1 Kodak. The stripping film was replaced with celluloid roll film, which was easier to handle for those amateurs who wished to do their own processing. In total around 11,000 of the original and No.1 Kodak cameras were

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<sup>57</sup> A. R. Dresser, 'Eastman stripping films', *British Journal of Photography*, no. 1483, vol. 35, 5 October 1888, p. 639.

<sup>58</sup> For example, H. S. Bellsmith, one of the managing directors of the Eastman Company, demonstrated the Kodak at the Darlington Photographic Society in early December 1888 and W. H. Walker showed the camera during the same month at London's Camera Club.



sold worldwide. How many were sold to the British market is difficult to estimate. At best based on total production numbers it was little more than a thousand. This was a significant number for a hand camera, but not the breakthrough that other historians have claimed. The number sold was less important than the combination of innovative principles enshrined with the camera: portability, simplicity of use, and the separation of picture-taking from picture-making.

Other Kodak camera models, in different sizes, were introduced during the 1890s at lower prices with most following the same basic design. Strong advertising helped ensure that the Kodak name captured a wider public imagination. The Kodak camera and detective photography were quickly absorbed into popular entertainment and 'Kodak' became a verb. The impact on British camera manufacturers was slight. Eastman's patenting of the camera in Britain on 9 May 1888 may have deterred direct copies being made but this had not proven a problem in other areas.<sup>59</sup> Only a handful of competitors introduced competing roll film hand cameras of which H. J. Redding's Luzo was the most direct competitor. Total sales of this camera were just over one thousand.<sup>60</sup> None were as compact as the Kodak and none offered the Kodak 'system' of developing and printing. Several British manufacturers introduced separate roll film holders that could be attached to an existing camera back but mostly they continued to concentrate on the bulkier box form detective camera taking plates or a plate magazine that held eight or twelve plates.

#### *The Pocket Kodak and the Brownie*

The Kodak and its immediate successors remained relatively expensive with reasonable, if unremarkable, sales. They appear to have appealed mostly to amateur photographers and not the mass-market characterised by the snapshotter. Two later cameras from the Eastman Company made the sale break through that Eastman had hoped for.

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<sup>59</sup> British patent number 6950 (9 May 1888), granted to A. J. Boulton on behalf of George Eastman.

<sup>60</sup> This estimate is based on observed serial numbers of the camera which fall within the range 219 to 1319. The sales would not have been confined to Britain.

In 1895 the Pocket Kodak was placed on the market (see Illustration 22, left). The camera was made in the United States using mass-production techniques, rather than being hand-made as the original Kodak had been. The first batch of 3000 cameras sent to Britain sold out within days. The camera was 2 3/8 x 2 7/8 x 3 7/8 inches and made twelve negatives 1½ x 2 inches on a roll of celluloid film. It could be loaded by the user in subdued daylight and was sold ready-loaded at 21s. In comparison the No. 2 Kodak, the successor to the 1888 Kodak, sold for £7 in 1897. Developing and printing the film cost 1s 6d.<sup>61</sup> The camera remained on sale until the Brownie camera was introduced.

The Brownie camera of 1900 built on the success of the Pocket Kodak (see Illustration 22, right). It was produced as cheaply as possible and was simply operated while still being capable of producing successful photographs. It sold for 5s in Britain and was an immediate success with over 100,000 being sold in Europe by Kodak Limited within the first year. In Britain over 120,000 had been sold by 1903 and 220,973 by 1913.

Successor models to the 1900 original were regularly introduced from 1901 and all were accompanied by extensive advertising. Kodak estimated that No. 1, 2 and 3 Brownie cameras were kept in use by their owner for three years and averaged between fifty and sixty exposures per year.<sup>62</sup> The Brownie camera was marketed directly to the snapshotter and to niche markets such as women and children: its size, simplicity of use and price were all perfectly pitched.<sup>63</sup>

The Brownie camera galvanised British camera makers who, realising the commercial success that it was achieving, quickly introduced their own imitations. Although aspects of the camera were protected by several patents there was no one specific patent which would limit general copying of the basic design. Houghton introduced its Scout range of

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<sup>61</sup> *Kodak and general price list*, London: Eastman Photographic Materials Company Limited, [June] 1897.

<sup>62</sup> *Kodak Sold*, manuscript held at the National Media Museum, Bradford.

<sup>63</sup> See M. Oliver, 'George Eastman's modern stone-age family: Snapshot photography and the Brownie', *Technology and Culture*, 48 (January 2007), pp. 1-19, for a discussion of this area.

cameras to compete directly and other manufacturers introduced similar-looking cameras with more or less features, and at different price levels for different markets. All were box form, compact, with simple controls and took roll film. Sales of film and developing and printing services offered by chemists, photographers and photographic retailers grew enormously to support the catalysed snapshotter market.

#### *Variant hand camera designs*

The two other styles of hand camera as defined by Coe also grew dramatically in terms of sales (see Illustration 23). The first successful collapsible-strut camera was introduced by the London retailer and manufacturer J. F. Shew in 1885 at the International Inventions Exhibition held in South Kensington, London.<sup>64</sup> The Eclipse camera was awarded a medal and went through various iterations, remaining popular with amateurs well into the twentieth century. A larger market for the collapsing-strut camera developed from 1897 with the introduction by Eastman of the Folding Pocket Kodak series of cameras, which established a basic camera design that remained popular through to the 1950s. Compared to the Shew camera the Kodak variant design was simple to get ready for use - the front simply pulled in to place - and it was easy to operate. The FPK, which used roll film, was launched in November 1897 and sold for £2 2s. It was aimed at the amateur and snapshotter markets where it, and successor models, proved popular, and other manufacturers copied it.

The folding hand and stand camera evolved with the introduction of dry plates and different models were introduced from the early to mid-1890s from various manufacturers including Kodak. These were aimed at both the amateur and professional photographer. Kodak concentrated on smaller hand cameras but one of the most successful models, the Sanderson, was introduced in 1899 by Houghton and had sold over 100,000 by the time production ended in 1939. While these cameras did not have the influence on the mass-market that the box form hand camera did, the better models

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<sup>64</sup> Also shown at the Inventions Exhibition was the Eastman-Walker roll holder which contained a roll of sensitive paper and could be fitted to cameras in place of a dark slide.

sold in their thousands to the amateur and professional.

There were also variants on the three basic designs that were aimed directly at the snapshotter. A compact size and, therefore a small negative, was usually the key feature of these. This precluded its purchase by amateurs who generally preferred a larger negative for contact prints and for making enlargements. The two most popular models were the Ensignette and Ticka cameras. Both were designed by a Swedish engineer Magnus Niéll and were manufactured by the London camera maker Houghton. The Ensignette was introduced in 1909 and a range of models appeared until the series was ended in the 1920s. The camera was a collapsible strut camera, and most models had no more controls than a box camera. The miniature roll film was made for Houghton by Kodak. The range sold tens of thousands and it started a trend for pocket-sized cameras culminating pre-war with Eastman Kodak's Vest Pocket Kodak camera of 1912. The VPK was to prove the most successful camera of its type with demand helped by the start of the First World War. It had sold nearly two million worldwide by its demise in 1926.

The Ticka camera was patented by Niéll in 1904 in Britain, Germany and the United States, and the British manufacturing rights were taken up by Houghton which sold it from 1906. The camera made use of a film cartridge that simply dropped into the camera, thus alleviating some of the problems associated with loading roll films. The Ticka was made in the form of a pocket watch and despite a small negative of 0.6 x 0.9 inches it gave good results. The camera was popular and Houghton claimed sales of over 10,000 within the first three months, including one to Queen Alexandra. A number of other models were introduced together with a range of accessories, developing and printing kits, and Ticka albums for prints. Production ceased in 1914 although the American version, the Expo watch camera, remained in production until 1939. Both the Ensignette and Ticka had no obvious imitators in Britain despite their popularity.

	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913
Brownie No. 1	38403	51530	19071	12070	10050	9420	8341	8571	7692	9098	9118	11064	12093	14452
Brownie No. 2		2442	14462	9870	9406	8787	8540	8763	7120	8273	8597	10342	11367	14227
Brownie No. 3									172	1816	1430	1427	1586	1781
Brownie No. 2A								1445	2522	2585	2855	3267	4490	8050
Total Kodak camera sales	67406	76406	49818	34096	31781	31613	30687	33081	32928	36948	40170	46906	61062	89727
Brownie box camera sales as a %	69	71	68	64	61	66	66	67	63	69	66	67	48	62

Table 7. Sales of Brownie box cameras 1900-1913 against total Kodak camera sales. Source: Kodak production UK figures.<sup>65</sup>

#### *The wider impact of the hand camera*

From 1881 the hand camera in the three forms described dominated the amateur and snapshot markets. They were closely associated with the development of dry plates and roll film. For the professional photographer a larger format and other, more traditional, styles of camera were preferred, but this represented the smallest market for manufacturers. The hand and stand camera dominated the amateur photographer market, and different forms of the folding-strut and box form camera straddled the amateur and snapshot markets. For this latter group the box form style of camera that had originated with the Kodak in 1888 found its apotheosis with the Brownie camera and its derivatives, by way of the Pocket Kodak of 1895. These cameras reached out to a mass-market in a way that no previous camera had done selling many tens of thousand. Kodak camera sales figures in Table 7 illustrate the success that the Brownie range of cameras had.

The introduction of the Brownie box camera expanded the market for cameras more generally. Up to 1913 the Brownie box camera, with the exception of 1912, the year the

<sup>65</sup> These production figures are recorded on a poorly copied sheet and held as part of a larger file at the National Media Museum, Bradford. I am grateful to Colin Harding, Curator of Photographic Technology, for making this information available.

VPK was introduced, never represented less than 50 per cent of Kodak's total United Kingdom camera sales by unit.<sup>66</sup> Other volume manufacturers producing competing box cameras are likely to have seen similar increases in sales. There was almost certainly a beneficial effect on sales of films because of the sales of these cameras although there is no extant evidence of this.

New types of camera and especially, new dry sensitive emulsions, gave a tremendous boost to serious amateur photography. There was less reliance on the need for complex chemical or technical knowledge, although for many practitioners and the photographic press this was a key part of being an amateur. The number of hobbyists joining photographic societies and camera clubs grew significantly from the 1880s.

### **Celluloid film**

Glass and cellulose were the two principal emulsion supports used in photography for negatives in the period after 1851, largely displacing metal and paper. Celluloid, compared with glass, offered lightness, flexibility, and immunity from breakage. Most importantly, it was the fact that it was around one-sixth of the weight of the equivalent glass plate which gave it portability. Celluloid was available in two forms: flat sheets and roll film. The former were also known as cut film, and was sold in the same standard sizes as glass plates, and the latter, which was also called ribbons, could either be cut into appropriate lengths or was sold in standard lengths for a precise number of exposures. These characteristics supported new types of camera design. Some disadvantages were associated with its manufacture, such as its tendency to buckle. Celluloid was instrumental in supporting photographic manufacturers that were able to tap into a new and large market of individuals who simply wished to record their family,

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<sup>66</sup> Interestingly this proportion remained remarkably consistent, in 1920 and 1921 53 per cent of the Kodak's total UK camera sales were box Brownie camera, with Folding Brownies at 23 per cent, Folding Pocket Kodaks (including the Vest Pocket Kodak) at 17 per cent. Juniors, Specials and panoramic and stereo models made up the remainder.

friends and outings – the snapshotter. As *Chambers's Journal* was able to report in 1896: 'A rival to glass as a support for the emulsion has recently been introduced, and what are known as celluloid films are coming into common use, especially among tourist photographers'.<sup>67</sup>

### *Origins*

Celluloid had been suggested as a base to support a sensitive emulsion on a number of occasions. As early as 1881 the *British Journal of Photography* had noted:

Mr Parkes, whose name is so well known in connection with industrial applications of gun-cotton or pyroxyline...has recently patented improvements in the manufacture of cellulose which seem to possess some considerable interest for photographers. If all that is published concerning the patent be not over-exaggerated – if we may use such an expression – the problem of a flexible support for photographic films would appear to be solved.<sup>68</sup>

This early optimism was premature. It was not until 1888 when John Carbutt in the United States was able to secure a supply of clear and uniform celluloid which was free from defects that it became commercially viable for photography.<sup>69</sup> The following year the same journal felt that there 'seems to be every probability of glass being, at least, partially, superseded by celluloid in negative work, especially out of doors'.<sup>70</sup> Within a short space of time many amateurs had taken up cut film as an alternative to glass plates with the London Stereoscopic Company announcing: 'the first consignment of the Stereoscopic Company's new transparent films which do not require stripping (Carbutt's patent)' in 1889.<sup>71</sup> The Stereoscopic Company was importing films directly from Carbutt in Philadelphia although demand regularly exceeded supply. E. H. Fitch was the first British manufacturer of celluloid films and began production in 1888,

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<sup>67</sup> 'Working in the dark', *Chambers's Journal*, no. 675, vol. 13, 5 December 1896, pp. 771-773.

<sup>68</sup> *British Journal of Photography*, no. 1123, vol. 28, 11 November 1881, p. 578.

<sup>69</sup> 'Carbutt's celluloid films coated with emulsion', *British Journal of Photography*, no. 1577, vol. 32, 23 November 1888, p. 737.

<sup>70</sup> 'Celluloid', *British Journal of Photography*, no. 1524, vol. 36, 19 July 1889, p. 469-470.

<sup>71</sup> Advertisement, *British Journal of Photography*, no. 1505, vol. 36, 8 March 1889, p. xi.

followed by Samuel Fry and Company Limited introducing its own celluloid films in April 1889. These were made under Carbutt's patent and Fry noted that they were 'exposed, developed, and treated exactly in the same manner as an ordinary dry plate', emphasising that they were coated with their standard Kingston Special emulsion.<sup>72</sup> John Désiré England also began commercially coating and preparing celluloid films by mid-1889.

There were difficulties with the supply of imported celluloid, which was only being made at Newark, New Jersey. In August 1889 S. Guiterman and Company, of New York and London, became English agents which helped maintain supplies.<sup>73</sup> Guiterman and Company offered celluloid under the trade name of 'Pyroxyllite' and their first advertisements noting its use in photography described them as 'sole proprietors and selling agents'.<sup>74</sup> Guiterman advertised 20 x 50 inch sheets of 'pure well-seasoned material' as 'the best film for negatives'.<sup>75</sup> The firm was still supplying celluloid for cinematographic use up until the First World War.<sup>76</sup> By 1911, of fourteen celluloid factories in existence globally three were in the United Kingdom.<sup>77</sup>

Although celluloid films were popular it was not until 1892 that difficulties with securing the film in a plate holder, the quality of the sensitised emulsion being used, and coating and development had been fully resolved. By then the *British Journal of Photography* stated that 'we believe that the employment of cut celluloid films in place of glass plates for the support of the sensitive film is likely, during the approaching

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<sup>72</sup> Advertisement, *British Journal of Photography*, no. 1509, vol. 36, 5 April 1889, p. xxiv. Carbutt had protected his invention with a British patent.

<sup>73</sup> *British Journal of Photography*, no. 1528, vol. 36, 16 August 1889, p. 535.

<sup>74</sup> Advertisement, *British Journal of Photography*, no. 1535, vol. 36, 4 October 1889, p. xv.

<sup>75</sup> Advertisement, *British Journal of Photography*, no. 1535, vol. 36, 4 October 1889, p. xv.

<sup>76</sup> See: <http://londonfilm.bbk.ac.uk/view/business/?id=391>, (accessed 10 September 2008).

<sup>77</sup> 'The celluloid industry', *British Journal of Photography*, no. 2676, vol. 58, 18 August 1911, p. 637. It is not clear whether all three UK factories were solely producing celluloid for the photographic (including cinematographic) industry. The factories were: United States (2); Germany (7); UK (3); France (2); with two in Japan due to start production.



season, to be more extensive than in preceding years'.<sup>78</sup> Other British-based plate manufacturers had by 1894 added celluloid films to their production: the European Blair Camera Company had a new factory built, Austin Edwards commenced a business only manufacturing films and E. H. Fitch relocated to a new factory to satisfy the demand for their films.<sup>79</sup>

Fitch's new factory was situated in a basement at Seldon House, Fulwood's Rents in Holborn and the films were coated in strips by hand then cut to size by machine.<sup>80</sup> By 1897 Fitch was supplying long lengths of film for use in the cinematograph and motion picture film became a major part of its business. In a reversal of the usual trend Austin Edwards's cut film emulsion proved so popular that he started to coat glass plates with the same emulsion in response to requests from his customers.<sup>81</sup> Edwards's business in Tottenham was bought in 1895 by the Britannia Works Company, which renamed his Queen brand plates and films as Ilford. Edwards subsequently re-established himself as a plate and film manufacturer in Warwick in 1898.<sup>82</sup> Although cut films were popular their pricing was questioned by amateurs. 'Wandering amateur' complained about the excessive price of films over plates which was nitpicking when there was as little as 6d. per dozen quarter-plates difference between the two.<sup>83</sup>

#### *Roll films and roll holders*

Cut films were quickly taken up by amateurs and by some professionals for certain types of photography. Roll film took longer to find acceptance among serious amateurs for whom there was no overriding incentive to move away from cut film or glass plates.

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<sup>78</sup> 'Celluloid films', *British Journal of Photography*, no. 1657, vol. 39, 5 February 1892, pp. 81-82.

<sup>79</sup> 'Trade', *The Photogram*, no. 8, vol. 1, August 1894, p. 194.

<sup>80</sup> 'News and Notes. Fitch's film factory', *British Journal of Photography*, no. 1803, vol. 61, 23 November 1894, pp. 750-751.

<sup>81</sup> 'Trade', *The Photogram*, no. 10, vol. 1, October 1894, p. 246.

<sup>82</sup> 'News and Notes', *British Journal of Photography*, no. 1828, vol. 42, 17 May 1895, pp. 315-316.

<sup>83</sup> 'Correspondence', *British Journal of Photography*, no. 1936, vol. 44, 11 June 1897, p. 383.

There had been an unsuccessful attempt to introduce lengths of sensitised material for multiple exposures in the late 1850s and the idea was resurrected in 1884. This had seen the introduction of sensitised emulsion coated on to tissue paper by Warnerke and Company Limited, which had been formed 'for the manufacture of photographic sensitive plates, tissue and paper, for negatives and positives'.<sup>84</sup> The following year the Eastman Dry Plate and Film Company introduced its 'complete system of film photography', making use of a paper negative material on a special roll holder.<sup>85</sup> Morgan and Kidd advertised their own system of film photography in the same issue of the *British Journal of Photography*.<sup>86</sup>

All three made use of negative tissue in special roll holders. Morgan and Kidd claimed priority over the other two systems, although it was Eastman's system with its Eastman-Walker roll holder that became the most successful. It allowed its roll holder to be fitted to almost any camera and offered photographers twenty-five exposures. The advantage of lightness and portability suggested that it would be most useful for tourist use but as the writer Marston Moor suggested 'we cannot believe that the position of the dry plate is seriously threatened. Paper has been tried before and found wanting'.<sup>87</sup> This was probably a reference to C. G. H. Kinnear who had designed a paper roll holder in 1857. Kinnear, who was still active as a photographer in the 1880s, supported the Eastman stripping film stating that it was the bigger advance 'by which all the advantages of glass negatives and of paper negatives are combined, without any of their disadvantages'.<sup>88</sup> Technical difficulties with stripping film, which was used in the

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<sup>84</sup> Advertisement, *British Journal of Photography*, no. 1278, vol. 31, 24 October 1884, supplement. The National Archives, Kew, BT31 3285/19373. Warnerke and Company Limited. The company was registered on 31 January 1884 with a share capital of £4000 and objective 'to prepare, manufacture, sell and deal in any and every description of material and appliance used in connection with photography'. It was dissolved on 17 November 1891.

<sup>85</sup> Advertisement, *British Journal of Photography*, no. 1317, vol. 32, 31 July 1885, p. iii; ii, iv, v, vi.

<sup>86</sup> Advertisement, *British Journal of Photography*, no. 1317, vol. 32, 31 July 1885, p. xi.

<sup>87</sup> Marston Moor, 'The future of dry plates', *British Journal of Photography*, no. 1343, vol. 33, 29 January 1886, pp. 67-68.

<sup>88</sup> C. G. H. Kinnear, 'Substitutes for glass plates', *British Journal of Photography*, no. 1345, vol. 33, 12 February 1886, p. 107.

original Kodak camera of 1888, limited the acceptance of roll film by photographers until celluloid replaced it (see Illustration 24).

In 1890 William H. Walker of the Eastman Company read a paper before the Camera Club on a new celluloid-based film where he stated that 'with the advent of the rollable transparent films we are entering upon a new era in photography, which has been anticipated for many years'.<sup>89</sup> The film made use of a nitro-cellulose base which was clear and transparent and more reliable than the earlier paper films. It was sold under the name Eastman Transparent Film. In the British market the supply of rollable film was only undertaken by the Eastman Company and additionally from 1895 by the European Blair Company.<sup>90</sup> After the initial introduction celluloid roll film underwent two further improvements which helped increase its take up by amateurs and, more importantly, made it easier for snapshotters to use. The *British Journal of Photography's* 'battle of spools vs. single films or plates' was given an added push in 1898 with the introduction of roll film that could be changed in daylight - previously it had to be changed in a dark room - which gave 'an almost irresistible impulse to continuous film work'.<sup>91</sup> Secondly, Kodak introduced a non-curling roll film in 1903 which greatly facilitated processing by amateurs.

The largest market for roll film was initially the snapshotter most of whom had no intention of processing their own films. By the mid-1890s the majority of cameras that made use of roll film were aimed directly at this market. The amateur who had hitherto preferred glass or cut film was increasingly recognising the advantages that roll film had and the *British Journal of Photography* remarked on this trend in 1899 noting: 'there is a large and growing demand for flexible films amongst amateur photographers and

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<sup>89</sup> W. H. Walker, 'The new rollable transparent film', *British Journal of Photography*, no. 1553, vol. 37, 7 February 1890, pp. 91-92.

<sup>90</sup> 'Answers to correspondents', *British Journal of Photography*, no. 1848, vol. 42, 4 October 1895, p. 640. The *BJP* knew of no other firm then supplying rollable film.

<sup>91</sup> 'Continuous films and their development', *British Journal of Photography*, no. 2008, vol. 45, 28 October 1898, p. 692.

others'.<sup>92</sup> Kodak's role in this market was crucial and the company itself emphasised this point when it was criticised for anti-competitive practices: 'but for the hundred of thousands of our Kodaks in use there would be practically no trade in rollable film at all'.<sup>93</sup> This was not an idle boast and an attempt by several manufacturers and retailers to set up a rival roll film manufacturing and retailing operation to meet Kodak head on was short-lived. The Alliance Roll Film Company Limited was in existence for less than two years.<sup>94</sup> Although there were other brands of roll film, principally those made by Austin Edwards, Ilford and imported brands they occupied only a very small part of the market as a whole.

Celluloid roll films were penetrating the amateur market but the older rollable stripping film still retained some popularity. Wellington and Ward introduced a new dry stripping film in the middle of 1899. An indication of their expectations for the film was shown by the fact that the firm needed to accumulate 'several thousand' spools before it launched the film in order to cope with the expected demand. The only market for such film was likely to have been the serious amateur or club photographer rather than the snapshotter.<sup>95</sup> The Thornton Film Company announced its own 'Dayroll' negative film, which it made available in both cut film and spool (or roll) form.<sup>96</sup> These and others were commercially short-lived in the face of the ease that celluloid film offered.

#### *The effect of celluloid on the snapshotter market*

The introduction of celluloid had a significant effect in bringing photography to individuals who had no interest in photography per se other than for making a record of family, friends and places. The immediate precursor to celluloid, rollable stripping film,

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<sup>92</sup> 'Ex cathedra', *British Journal of Photography*, no. 2048, vol. 46, 4 August 1899, p. 483.

<sup>93</sup> 'Correspondence. Kodak Limited and the trade', *British Journal of Photography*, no. 2139, vol. 48, 3 May 1901, pp. 284-285.

<sup>94</sup> The National Archives, Kew, BT31 9783/72884, The Alliance Roll Film Company Limited. Its history is discussed in more detail in Chapter 7.

<sup>95</sup> 'Ex cathedra', *British Journal of Photography*, no. 2042, vol. 46, 23 June 1899, pp. 385-386.

<sup>96</sup> *British Journal of Photography*, no. 2104, vol. 47, 31 August 1900, p. 545.

which carried a film on a paper base was not easy to process and was quickly superseded by celluloid. It offered practical advantages in terms of processing and, later, with loading and unloading from the camera without the need for a dark room. Roll film was also crucial in supporting the development of new camera designs. It allowed for smaller models that did not require additional film holders. The combination of a hand camera and daylight loading film was crucial in boosting demand from snapshotters who started to use these cameras and made use of others to process and print their plates or cut films.

### **Mechanisation in equipment manufacturing**

#### *W. Watson and Sons*

There had been some limited mechanisation of photographic manufacturing before the 1880s but this had been confined to the introduction of machines for cutting or finishing camera wood work (see Illustration 26). Hand production was generally the norm. The first significant mechanisation was introduced to photographic manufacturing by W. Watson & Sons, which ensured its longevity as a camera manufacturer by modernising its workshops and adapting products to the changing demands of amateurs and professionals. This was done in terms of both design and price, and by increasing output, which mechanisation helped.

The firm was established as an optician in 1837 by William Watson, and it was his son, Thomas Parsons Watson, who was responsible for extending the business into optical instrument making when it started making microscopes circa 1867. The making of cameras and photographic equipment started about the same time with manufacturing taking place at Dyer's Buildings, at the rear of the firm's main premises at 313 High Holborn, on the edge of Clerkenwell. In 1886 the *British Journal of Photography* made

a visit to Watson's factory to see the newly completed camera workshops.<sup>97</sup> These were now separate from those used for making other optical goods such as microscopes and telescopes and were under the superintendence of Mr J. L. Lane who had run his own camera making business. The workshops were 'divided into seven working shops and arranged [so] that all the men employed in any one shop shall be doing the same class of work'. The article noted separate wood working, metal working, polishing and finishing rooms. Although not describing machinery it noted that the camera making employed fifty hands. The introduction of production line manufacturing and the standardisation of parts, which the company pioneered, were important in ensuring that manufacturing could be undertaken efficiently. These generally went hand-in-hand with mechanisation.

A subsequent visit in 1889 made note of the fact that the factory had been enlarged to occupy a four-storey building, with about one hundred hands being employed. On this occasion the writer commented 'the whirling sound of machinery in motion apprises us of the fact that we are in a veritable factory'.<sup>98</sup> A Crossley gas engine working up to fifteen horsepower provided the power for the factory. This drove 'machines of various kinds which have been called into requisition to aid, or in some cases to supersede manual labour'. They included planers, cutters, moulders and groovers and saws in the wood department, and lathes and saws in the metal department. Watson and Sons also had its own optical department in which it ground lenses, and made the brass work and iris diaphragms used in its photographic lenses. Manufacturing appears to have been done in batches with stocks of the basic camera parts being made ready for finishing only when an order was received. Finished cameras were produced in batches of six to twelve. Despite all the parts of the camera being made by machine, they still required assembly by hand. For a traditional mahogany field camera design such as the Acme this took a considerable amount of time as the BJP reporter noted: 'it occupies over two weeks for a highly skilled workman to put together and fit a full-plate one for being

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<sup>97</sup> 'Metropolitan industries. II. Watson's camera factory', *British Journal of Photography*, no. 1381, vol. 33, 22 October 1886, pp. 669-670.

<sup>98</sup> 'Photographic industries. No. 1. Watson's camera factory', *British Journal of Photography*, no. 1516, vol. 36, 24 May 1889, p. 346-347.

placed on the shelves of the warehouse’.

By the late 1880s Watson was one of the largest camera makers and the adoption of mechanisation, simple production line manufacturing and standardisation of camera parts ensured that it was well placed to mass-produce good quality cameras at a reasonable cost. Most of their contemporaries in 1889 were smaller and working using more traditional methods. By the mid-1890s only the Thornton-Pickard Manufacturing Company of Manchester, and E. and T. Underwood of Birmingham were probably producing cameras on a similar scale.<sup>99</sup>

*J. Lancaster and Son*

Date	Cameras sold
8 July 1881. Le Merveilleux camera	100 sold in three weeks
5 August 1881. Le Merveilleux camera	250 sold in six weeks
2 September 1881. Le Merveilleux camera	Over 400 sold
4 November 1881. Le Merveilleux camera	Over 600 sold

Table 8. Sales of Lancaster’s Le Merveilleux camera July-November 1881. *Source: Lancaster advertisements 1881*

J. Lancaster and Son of Birmingham claimed to be ‘the largest makers of photographic apparatus on the world’ by 1889 and regularly advertised the number of cameras sold. It was founded in 1835 by James Lancaster who was an optician dealing with spectacles, microscopes and telescopes. By the mid-1860s the firm was advertising cameras, lenses and photographic chemicals, including collodion for which it claimed fourteen years experience in making, dating back to 1852.<sup>100</sup> Responding to a statement that the firm was credited with having initiated the amateur trade W. J. Lancaster, the son of the founder, stated that: ‘I introduced the first guinea camera in the year 1880, and there is

<sup>99</sup> Advertisements, *British Journal Photographic Almanac 1889*, London: Henry Greenwood & Co., 1889. This statement is also based on a survey of the relative numbers of surviving cameras.

<sup>100</sup> Advertisement, *British Journal of Photography*, no. 307, vol. 13, 23 March 23 1866, p. v.

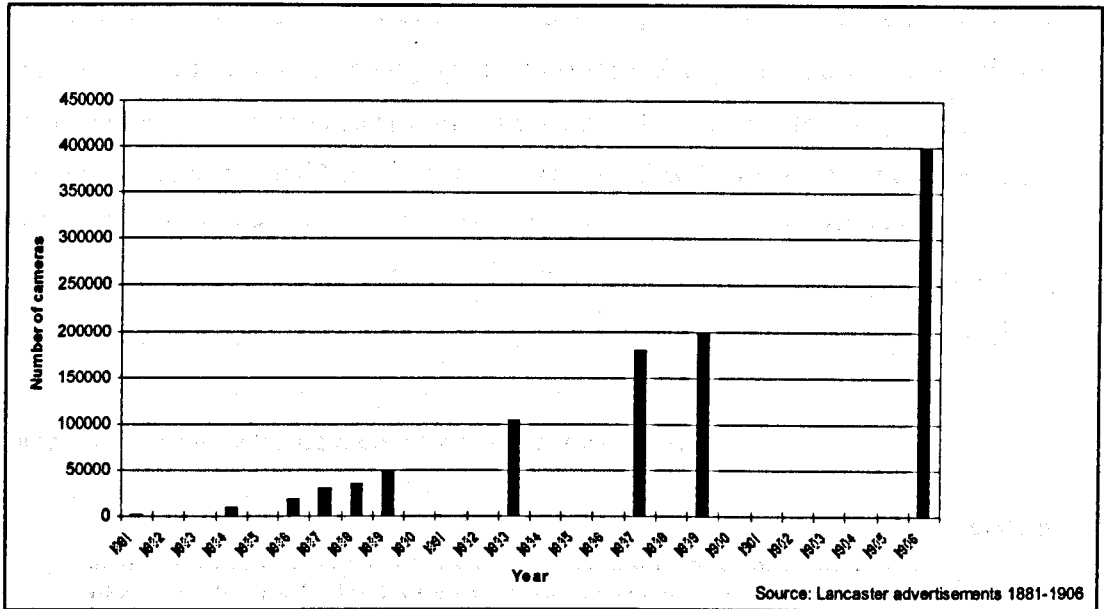


Figure 6. Total Lancaster camera production 1881-1906.

no doubt that had a good deal to do with the amateur taking to photography'.<sup>101</sup>

Lancaster was probably referring to the Le Merveilleux camera and Table 8 shows the initial sales of this camera (see Illustration 26).

By 1897 the firm claimed total sales of over 180,000 cameras and 250,000 lenses and was making 20,000 cameras annually. Figure 6 illustrates the growth of total Lancaster camera production between 1881 and 1906 and highlights the remarkable growth in sales that the company achieved over the period. This growth was only achieved by adopting a radically different business model to its contemporaries.

It is unclear how James Lancaster manufactured in the early days although as a small optician he probably was making and assembling photographic equipment in his own workshop. This had changed dramatically by the 1890s. In contrast to Thornton-Pickard or Watson, Lancaster was not operating a standard manufacturing model based on a mechanised factory. Once camera production began to increase significantly in the

<sup>101</sup> 'The World of Manufacture. The King of the Camera Trade', *The Photographic Dealer*, June 1897, p. 121.



1880s the firm adopted a new way of manufacturing using outworkers to manufacture and assemble cameras and photographic equipment. This gave Lancaster the ability to manufacture according to demand without tying up large amounts of capital in buildings, machinery and labour.<sup>102</sup> It is significant that the firm did not convert to a limited liability company until 1904, later than its competitors. It had no need for capital to finance manufacturing facilities or plant. The company relied principally on selling to retailers and depended 'very little, if at all, on a dealer's trade or chance custom'.<sup>103</sup>

Lancaster's manufacturing method was described in 1930:

The great output of his [W. J. Lancaster] apparatus was organized on a system which I do not think has ever been imitated on a similar scale in the photographic trade. He had no factory in the ordinary sense. In Birmingham, as in Paris, there have always been a vast number of individual workshops, turning out goods in wood and metal. In those days if you journeyed round the outskirts of "Brum" you discovered numerous small shops, all busily engaged and all "making for Lancaster."<sup>104</sup>

#### *Thornton-Pickard Manufacturing Company*

The Manchester firm of Thornton-Pickard adopted a more standard approach to its manufacturing establishing a new purpose built factory in 1891. The company was founded as The Thornton Manufacturing Company in 1886 and renamed in 1888 when Edgar Pickard joined John E. Thornton.<sup>105</sup> The company's original premises in St Mary's Street, Manchester, were small and employed around ten men at individual work benches. Although there were simple belt driven machines much of the work was

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<sup>102</sup> This method of manufacturing using small workshops was well established by the time Lancaster adopted it. See: Eric Hopkins, *Birmingham: the first manufacturing town in the world, 1760-1840*, London: Weidenfeld and Nicolson, 1989, p. xii.

<sup>103</sup> 'A new photographic depot in Birmingham', *The Optician*, 14 January 1892, p. 261.

<sup>104</sup> George E. Brown, 'After 25 years', *British Journal of Photographic Almanac 1930*, London: Henry Greenwood and Co., 1930, p. 182

<sup>105</sup> See: Douglas Rendell, *The Thornton-Pickard Story*, Prudhoe: Photographic Collectors Club of Great Britain, 1992, for a general history of the company, and 'Photographic Industries. No. 1. The Thornton-Pickard Manufacturing Company', *Photographic News*, no. 1, vol. 40, (New Series), 3 January, 1896, p. 6-8.

undertaken by hand. The new factory at Broadheath, Altrincham, cost around £1200 to build and was far more extensive occupying 10,000 square feet with up to one hundred men employed. The factory was powered by a National gas engine to drive machinery. By 1896/97 there was a need for a factory extension to meet increased demand and by 1914 the factory had been extended several further times, reaching a total of 20,000 square feet. Mechanisation enabled the company to mass produce a large range of different products (see Illustration 27). Before 1914 the company's own manufacturing was supplemented by the importation of cameras from Europe which were re-badged with the T-P name and by products manufactured for Thornton-Pickard by firms such as Leeds-based A. Kershaw and Sons.<sup>106</sup>

#### *The role of labour in manufacturing*

The number of people employed in photographic manufacturing was always relatively small and in the early period firms were small, close-knit, production units. This precluded any formal organisation of labour and economic circumstances would have limited the ability to organise and secure improved conditions or pay. The skills involved in camera construction were not specialised meaning that labour could be easily replaced, even those nominally working in more specialised roles such as coating plates or roll film.

By the 1890s when there were several large firms employing hundreds of employees, including women, there was still no strong demand from employees to unionise or to organise themselves to secure better conditions of work. *The Photogram* noted in 1899 that there was generally a good relationship between employer and employee and:

We never hear of strikes or serious disputes, a state of affairs that which is probably largely due to the fact that most of our photographic manufacturers are

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<sup>106</sup> For an analysis of Thornton-Pickard's profitability and corporate history see Michael Pritchard, 'Thornton-Pickard: Some documentary history', *Photographica World*, No. 57 (June 1991), pp. 11-15.

educated and cultured people, who take great personal interest in their businesses and give great consideration to their employees.<sup>107</sup>

A Photographic Cabinet Makers Society was established in 1889 under the Trade Union Acts of 1871 and 1876. The Society was small. By the beginning of 1899 it had a membership of twenty-five and it primarily seems to have existed as a welfare organisation supporting out of work members, although it did also provide strike pay. The officers of the Society were based in Clerkenwell or North London where the photographic manufacturing trade was concentrated and meetings were held in Grays Inn Road. The Society failed to achieve any wider membership. It was formally registered as a trade union in 1900 and it was dissolved in 1907.<sup>108</sup>

The photographic press was generally anti-union. Within the context of photographic studio assistants it ran editorials against the need for them to combine against their employers, although it recognised there was a need for photographers to come together within one trade body.<sup>109</sup> A similar view about individuals within photographic manufacturing would also have been taken.

The good relations *The Photogram* had alluded to were supported by a paternalistic attitude within firms which provided social activities such as summer outings and group dinners at Christmas time. The larger firms also offered similar activities with some establishing formal social clubs to arrange regular events. Burroughs, Wellcome and Company, which had extensive interests in photography through its Tabloid range of chemicals, provided its 800 factory employees with an estate close by where it offered a large range of recreational facilities. Kodak also established a formal social club for its employees.

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<sup>107</sup> 'Employers and employed', *The Photogram*, no. 68, vol. 6, August 1899, pp. 254-255.

<sup>108</sup> The National Archives, Kew, FS 7/25/1212. Photographic Cabinet Makers Society.

<sup>109</sup> The *British Journal of Photography* and *Photographic News* both focused on the photographic studio and the roles of photographers and assistants. They very rarely covered the role of the individual worker within the manufacturing of photographic goods.

### *Trade associations*

Although individual workers were non-unionised, by the late 1880s as the industry expanded there were increasing calls for the formation of a trade association. Such a body was intended to represent the wider interests of photographers, manufacturers and the retail trade rather than employees. Hedley M. Smith suggested that the Photographic Convention form a dealers' section which did not come to anything and it was not long before other efforts gathered pace.<sup>110</sup> In London it was led with a proposal to form a photographic trade section of the London Chamber of Commerce. As the *British Journal of Photography* reported: 'there are many scientific societies and clubs in connexion with photography, but no commercial association of the trade exists, or has ever been attempted, and it is quite time that we had a combination similar to those possessed by most other trades'.<sup>111</sup> The proposed organisation, which was to be run by its own governing body, was seen as addressing issues affecting the trade. The *British Journal of Photography* summarised these in 1889:

the working of the Merchandise Marks Act, the steps which are being taken to establish the use of the decimal system in weights and measures, the promoting and supporting any application to Parliament which may be beneficial or necessary to protect photographic interests, the organization of annual exhibitions, the amendment of the Copyright Act and Patent Laws, the railway rates question, &c., besides other similar matters which may arise from time to time in the future, and which could be more effectually dealt with by an association allied with so powerful and representative a body as the London Chamber of Commerce, consisting of about three thousand mercantile firms and other engaged or interested in trade and commerce<sup>112</sup>

Progress with establishing the L.C.C. Photographic Trades' Section was slow and only

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<sup>110</sup> Hedley M. Smith, 'The Photographic Convention. A Dealers' Section', *British Journal of Photography*, no. 1502, vol. 36, 15 February 1889, p. 115.

<sup>111</sup> 'Proposed photographic trade section of the London Chamber of Commerce', *British Journal of Photography*, no. 1517, vol. 36, 31 May 1889, pp. 365-366.

<sup>112</sup> *British Journal of Photography*, no. 1517, vol. 36, 31 May 1889, pp. 365-366.

by March 1890 had a formal meeting been held.<sup>113</sup> The next meetings were mainly concerned with the organisation of the Photographic Trades' Exhibition that was to be opened at the Draper's Company Hall in June. The exhibition was successful with seventy exhibitors including eleven from the provinces and visitors averaging 1200 a day for the ten days that it was open. A report from the executive committee noted that 'many of the visitors took a quite practical interest in the apparatus and showed a lively appreciation of the Photographs displayed' and 'considered commercially one may safely say that the trades represented enjoyed a peculiarly efficacious advertisement at a moderate cost'. The exhibition made a small surplus which was handed back to exhibitors.<sup>114</sup>

Over the course of the next four years the Section dealt with topics that had been outlined in the *British Journal of Photography* editorial including copyright and the setting up of a fine art section and the Photographic Copyright Union, the proposed decimalisation, the setting of lens standards, safety issues regarding gas cylinders and attendance at the Antwerp Exhibition of 1894. The only apparent contentious matter minuted was the resignation of the Eastman Company from the Chamber 'in consequence of certain members of the Section infringing the Merchandize Marks Act'.<sup>115</sup> The Section urged the company to reconsider, recognising that it was stronger with Kodak as part of the membership.

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<sup>113</sup> London Chamber of Commerce. Photographic Trades' Section Minutes. 1890-1894. Guildhall Library, Ms 16708. The minute book commences with a meeting held on 14 April 1890 at which minutes of the previous meeting held on 28 March were signed. The last minuted meeting took place on 23 February 1894. There are no minutes for 1893. It is not clear if the Section fell into abeyance at this point although it seems likely. The next attempt to bring the photographic trade into the L.C.C. was not until 1916 when Minutes of the Scientific Instrument, Optical & Photographic Section. Dated 13 December 1916 noted the desirability to form a Section (London Chamber of Commerce. Scientific Instrument, Optical & Photographic Section. Minute Book. 1916-1927. Guildhall Library – Ms 16727). A photographic subsection was established in January 1917. In December 1917 the word 'photographic' was dropped from the Section title.

<sup>114</sup> London Chamber of Commerce. Photographic Trades' Section Minutes. 1890-1894. Guildhall Library, Ms 16708. Minutes, p. 8.

<sup>115</sup> London Chamber of Commerce. Photographic Trades' Section Minutes. 1890-1894. Guildhall Library, Ms 16708. Minutes, pp. 10-11.

The Photographic Trades' Section of the L.C.C. failed to achieve little more than a trade show and it appears to have fallen in abeyance until 1916. Another body, this time national, The Photographic Manufacturers' and Dealers' Association, which was established with a meeting on 29 July 1890, with a wider cross-section of the industry as members, appears to have had more success. An open letter together with the rules and Articles of Association was published in the *British Journal of Photography*.<sup>116</sup> Birt Acres, writing as the honorary secretary, pro tem., introduced the Association: 'the photographic trade having assumed very large dimensions during the last few years, it has been felt desirable that there should be a Society formed to specially protect the interests of the trade'.

The object of the Association as set out in the memorandum of association was to: 1. promote the interests of the trade generally; 2. to protect members against those unworthy of mercantile credit; 3. to effect the payment of debts due to members; 4. to keep a register of member's debtors; 5. to effect, as far as possible, the federation of manufacturers of, and dealers in, photographic appliances, for promoting the general interests of the photographic trade, and dependent or affiliated industries; 6. to support measures for the protection of traders and the improvement of commercial law; 7. to cooperate or amalgamate with any other association with similar objects; 8. to promote the interests of the photographic trade by holding exhibitions of photographic apparatus; and, 9. to do all other such lawful things as are incidental or coincidental to the above.

Membership was restricted to 'merchants, manufacturers, and wholesale and retail traders, carrying on business within the district of the Association in the photographic trade and dependent or affiliated industries'. The provisional council included representatives from the major manufacturers: George Houghton, Conrad Beck (R. & J. Beck), A. H. Harman (Britannia Works Co.) A. C. Edwards (B. J. Edwards & Co.) and W. H. Walker (Eastman Co.). It was formally incorporated on 2 September 1890. The

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<sup>116</sup> 'Photographic Manufacturers' and Dealers' Association', *British Journal of Photography*, no. 1584, vol. 37, 12 September 12 1890, pp. 588-591.

initial membership included most of the major photographic equipment and optical manufacturers, sensitised goods manufacturers, publishers and retailers.

The *British Journal of Photography* in an editorial comment in July 1891 noted that the progress of the Association – and that of two other trade bodies set up during the previous year – was ‘not large enough to assure the Association’s existence for any appreciable length of time’.<sup>117</sup> It also remarked on the absence of some of the largest names from the Association and its failure to address price-cutting, the offering of trade discounts and the difficulty of distinguishing between the bonâ fide dealer, photographer and amateur because of differing interests within the membership caused its lack of success. These were all significant issues for the trade, which the rapid growth of the market for photography had made more urgent that they be resolved.

In 1896 C. F. S. Rothwell, a photographic manufacturer from Liverpool, addressed these same questions. He argued that ‘the time has now arrived when a trade union or association could be formed that would be of considerable advantage to both material dealers and manufacturers, for the interests of both are the same.’<sup>118</sup> The same issues of discounting and price-cutting were noted as the justification for such an association. Rothwell concluded on an optimistic note: ‘We feel sure that if only one or two enterprising dealers will set themselves to work in the direction indicated, and form associations in their respective localities, a big advance in the stability and prosperity of the photographic dealing trade will have been made’.<sup>119</sup> The appeal failed to produce any response. The only photographic trade journal, *The Photographic Dealer*, urged its readership the following year to consider forming local photographic trade associations to secure benefits such as reduced carriage or contracts for repairs of scales. It also

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<sup>117</sup> ‘The trade in council’, *British Journal of Photography*, no. 1629, vol. 38, 24 July 24 1891, pp. 466-467. The other two bodies noted were the National Photographers’ Association and the Photographers Assistants’ Union both of which were aimed at the commercial photographic studio.

<sup>118</sup> C. F. S. Rothwell, ‘The needs of a photographic materials trade protection association’, *The Photographic Dealer*, June 1896, p. 12.

<sup>119</sup> C. F. S. Rothwell, ‘The needs of a photographic materials trade protection association’, *The Photographic Dealer*, June 1896, p. 12.

proposed forming local photographic branches of the Proprietary Articles Trade Association.<sup>120</sup>

Smaller organisations with more specific aims and a specialist membership were more effective at realising their objectives. The actions of one such body prompted a negative response when its actions appeared to threaten retailers. The Arbroath firm of W. F. Geddes & Son wrote to the *British Journal of Photography* in April 1897 complaining of a circular it had received headed 'An Association of Manufacturers of Photographic Plates, Papers, and Films'.<sup>121</sup> Geddes noted: 'We find fifteen firms have appended their names to the circular as binding themselves together to keep the dealer right' and limiting the discounting on purchases by photographers while making them available to dealers 'who can be what he likes, china merchant, ironmonger, grocer, anything in fact except a professional photographer'. The firm proposed the setting up of a professional photographers' dry plate company to counteract the manufacturers' body hoping to discourage the activities of the Association by affecting the business of the member companies. Subsequent correspondence noted that it would only be the chemists that would be 'jumping for joy to think the manufacturers have gone to so much trouble for his benefit'.<sup>122</sup>

One dry plate manufacturer, Cadett & Neall, in defence of the new arrangements pointed out that since their establishment in 1892 they had only one set of discounts and 'since the formation of the Plate and Paper Manufacturers' Association, the discounts agreed to by the Association are larger than those hitherto given or sanctioned by Messrs Cadett & Neill'.<sup>123</sup>

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<sup>120</sup> The chemists' Proprietary Articles Trade Association was founded in January 1896 to unite the interests of manufacturers, wholesale dealers and retailers.

<sup>121</sup> W. F. Geddes & Son, 'Concerning the Association of Manufacturers', *British Journal of Photography*, no. 1927, vol. 44, 9 April 1897, p. 239.

<sup>122</sup> 'Photographer', 'Prices and the Association of Manufacturers', *British Journal of Photography*, no. 1930, vol. 44, 30 April 1897, p. 287.

<sup>123</sup> *British Journal of Photography*, no. 1932, vol. 44, 14 May 1897, p. 307.



The general lack of success in establishing an effective wider trade association able to look after the interests of photographic manufacturers and retailers was a reflection of the nature of the industry. Up to circa 1883 the manufacturing industry had largely been made up of small manufacturers with trade being conducted on an individual basis with a customer or retailer. By the 1890s the photographic industry had grown significantly and included retailers such as Boots the chemist and department stores with interests beyond photography. Although a new layer in the form of the wholesaler between the manufacturer and customer was starting to appear much of the trade was still being conducted directly between manufacturers and retailers. Within ten years the wholesaler was to become a significant force. This made organising discounts, one of the principal *raison d'etres* of a trade body, irrelevant. The amateur market had become more important than the professional photographer and manufacturers wanted to ensure that their products were being stocked as widely as possible. The *British Journal of Photography* writing in 1891 assessed the situation:

Within the last ten or a dozen years the conditions of commercial photography – by which term we distinguish the buying and selling and manufacture of materials – have undergone a complete revolution. This has been caused, we hardly need say, by the enormous number of amateurs who have been attracted to the art, and who notwithstanding the frequent prediction that the craze would not last, appear, if anything, to increase rather than decrease. The output of the various manufactures has, of course, grown accordingly, while the business of distributing them has also been taken in hand by very many to whom photography in pre-gelatine days offered no inducement for the investment of capital and enterprise... There are numerous amateurs who spend more money on photography than many professionals, who order their plates by the gross, have several lenses and cameras, use a considerable quantity of chemicals, cards, and so on, whose accounts, in fact, total up to considerable yearly sums, and are worth having. Amateurs of this kind very often buy more cheaply than the professionals.<sup>124</sup>

It was only in 1901 that professional photographers finally established a lasting body to

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<sup>124</sup> 'The trade in council', *British Journal of Photography*, no. 1629, vol. 38, 24 July 24 1891, pp. 466-467.

look after their own interests.<sup>125</sup> In the same year another body, the Photographic Trade Association, held its first annual general meeting in April 1901 with a membership that was open 'to wholesale and retail dealers, manufacturers and responsible managers of such firms as are employed in the photographic trade, as well as to members of the Association'.<sup>126</sup> The Association claimed an initial membership of 600 and had been 'formed in the interests of dealers and trade'. The *British Journal of Photography* noted: 'the Trade Association has been formed at an opportune time. Competition amongst the manufacturers has become extremely keen, and our advices from the Continent and American point to the probability of further attacks on the English market from abroad.' Within Britain Kodak's new conditions of sale, discussed in Chapter 6, had attracted the ire of nearly 1000 dealers and the Association had been formed in response to this.<sup>127</sup> This organisation continued for some time and it was superseded in 1914 by a new body which remained in existence until the 1980s.<sup>128</sup>

### **Standardising manufacture**

The period up to the 1870s had been a free-for-all in terms of the way photographic manufacturers produced their products, irrespective of whether it was equipment or sensitised goods. The only standardisation which existed was in the size of sensitised plates. These had largely been defined with Daguerre's original camera made by Giroux in 1839 and had remained the accepted standard. In Britain Daguerre's original plate size, had become known as whole-plate after it was converted from centimetres to its imperial equivalent. Whole-plate was defined as 6½ x 8½ inches with smaller sizes

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<sup>125</sup> John Hannavy, *Images of a Century. The Centenary of the BIPP 1901-2001*, Ware: British Institute of Professional Photography, 2001. The Professional Photographers Association was founded on 28 March 1901 and continues today as the British Institute of Professional Photography.

<sup>126</sup> *British Journal of Photography*, no. 2135, vol. 48, 5 April 1901, p. 220.

<sup>127</sup> *British Journal of Photography*, no. 2137, vol. 48, 19 April 1901, p. 242.

<sup>128</sup> The Photographic Dealers' Association was established in 1914

being roughly fifty per cent divisions of this. A number of intermediate standard imperial sizes and some minor variations were also produced, see Table 9. Metric plates were also available and were usually interchangeable with the imperial equivalent depending on the tolerances of manufacturers of cameras and plate holders.

Alternatively, plate holders could be adapted with special sheaths which also allowed smaller plates to be used in larger cameras.

Whole-plate	8 ½ x 6 ½ inches	24 x 20 inches	5 x 4 inches
Half-plate	6 ½ x 4 ¾ inches	20 x 16 inches	3 ¼ x 3 ¼ inches (lantern slides)
Quarter-plate	4 ¼ x 3 ¾ inches	15 x 12 inches	
	2 ½ x 3 ¾ inches	12 x 10 inches	
	2 ½ x 2 inches	10 x 8 inches	

Table 9. Standard photographic plate sizes

The standard sensitised material sizes carried over into cut film and a number of the principal sizes have lasted up to the present day. By the 1890s the most popular sizes for plates and cut films had narrowed to quarter, half-plates, 5 x 4 inches and some smaller sizes such as 2½ x 3½ inches for certain hand cameras and 3¼ x 3¼ inches for lantern slide work.<sup>129</sup> Smaller sizes generally became more popular as improvements in optics and the sensitivity of emulsions arrived from the late 1870s. The widespread introduction of roll film, mainly for snapshot cameras, led to a plethora of films giving differently-sized negatives and fitting different cameras. Kodak, for example, had twenty-eight different sizes and makers such as Houghton introduced their own sizes for specific cameras as well as sizes that corresponded to the Kodak's standard sizes.<sup>130</sup> The only other generally accepted standardisation was in optics where the focal length, which was essentially a mathematical calculation, was widely adopted from the 1840s.

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<sup>129</sup> *British Journal of Photography*, no. 1561, vol. 37 4 April 1890, p. 212.

These two examples were exceptions. There was no standardisation in the manufacturing of photographic equipment in terms of the components used, even within individual firms. Sensitised materials carried no indication of their sensitivity to light. This began to change from the 1880s. The requirements of mass-production and the needs of the mass snapshotter market began to influence the manufacturing process. Increases in manufacturing scale called for standard parts, and amateurs began to demand consistency between the sensitised goods they were buying. In addition, for the snapshotter, with no particular knowledge of photography, standardisation was a prerequisite for mass-adoption.

#### *Photographic equipment*

From the 1880s, firms that were mass-producing cameras realised that the standardisation of components was essential if they were to be able to increase production. Until this time manufacturers were producing styles of cameras, for example, field, view, stereoscopic or studio, differentiated by plate size. Occasionally they would be designated with a number to indicate a plate size. As manufacturers' ranges of cameras were extended to target different markets so more precise, and for the amateur, more appealing, names began to be introduced. By 1900 all the major manufacturers had extensive ranges of named cameras which were usually supplemented by a numerical designation. Such names were also used to support the marketing of equipment. Kodak for example, had its Brownie range of box cameras which were designated 1, 2a, 3, 3a, et cetera, depending on film size.

Ranges of cameras that could use the same manufactured components made good business sense. Standard parts and fittings could be mass-produced or bought in from external suppliers and used as required in the knowledge that they would all fit. They could also be interchanged or replaced more easily. W. Watson and Sons were amongst the earliest adopters of this new way of manufacturing. From 1 January 1888 the firm

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<sup>130</sup> Brian Coe and Paul Gates, *The snapshot photograph. The rise of popular photography 1888-1939*, London: Ash and Grant, 1977, pp. 138-139. This lists Kodak film sizes from 1895-1939.

introduced standard sizes for camera fittings and standard components:

We have manufactured a series of metal gauges for every size of Camera in ordinary demand, to which we now fit the principal parts of our Cameras; and that on and after January 1<sup>st</sup>, 1888, dark slides of any one size will fit and accurately register in any other of our Cameras made for the same size plates; and all clamping screws and nuts from Cameras of the same size will be interchangeable, and any of these required can be supplied by us by return <sup>131</sup>

Although the advertisement emphasised the benefits for the consumer there were also considerable benefits for Watson, too, in the manufacturing process. Small fittings and screws could be made or purchased in bulk and manufacturing could be standardised more easily between individual employees working from standard drawings or templates. Standardisation supported the specialisation of labour and it was considered more efficient having men mass-producing parts for subsequent assembly by women or less-skilled workers. Lancaster, which was also manufacturing to standard designs and parts, using a system of outworkers to manufacture cameras, also used standard metal fittings and components. This was a key aspect in supporting their use of outworkers for manufacturing and assembly.

With the move towards smaller hand cameras and the precision manufacturing of amateur cameras standardisation was critical to the success of such enterprises. Britain's largest photographic equipment factory, operated by Houghton, opened in 1908 and was designed to operate on these principles. Employees were specialised in the work they undertook and they made use of standard tools and jigs for manufacturing purposes with the factory also making screws and fittings for use in construction.<sup>132</sup> For firms that were continuing to build cameras in smaller numbers and by traditional methods standardisation offered no real advantage. Individual cameras, even of the same model,

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<sup>131</sup> Advertisement, *Year Book of Photography and Photographic News Almanac for 1888*, London: Piper & Carter, 1888, n.p.

<sup>132</sup> 'The Ensign Works of Houghtons Limited', *British Journal of Photography*, no. 2501, vol. 55, 10 April 1908, pp. 285-286.

continued to exhibit minor variations in construction depending on the individual who had made it.<sup>133</sup>

The other innovation that Watson introduced to mass-produced cameras was to serial number their output. This commenced at 6000 from 1 January 1888. Serial numbering had been undertaken by most lens manufacturers, including Ross and Dallmeyer, but cameras had generally not been numbered as it offered no commercial benefit other than providing a simple piece count during the period of hand manufacture.<sup>134</sup> Provided suitable records were kept and depending on how it was implemented then serial numbering offered a number of benefits. It provided the ability to quantify the number and type of camera being made, it made quality control more effective and it meant that a particular product could be tracked back to an individual batch or even an employee. Serial numbering or marking cameras or sensitised materials with production batch numbers was introduced by the largest manufacturers such as Houghtons which marked some of their hand cameras with a batch number, presumably for quality control and inventory purposes. Smaller camera manufacturers - such as Newman and Guardia and Adams and Company - that were producing small numbers of high-quality cameras also numbered their cameras. In the case of Newman and Guardia, these were prefixed with a model designation. It is likely that each number was recorded in a ledger along with the date of sale and the buyer together with any subsequent changes or repairs, although none have been located.

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<sup>133</sup> Based on an extensive examination of cameras that passed through Christie's photographic auctions from 1986-2007 it is evident that smaller manufacturers had little consistency in the construction of the same model of camera. The major manufacturers noted in the text and some manufacturers making for the trade or with more than, say, twenty employees, such as McKellen, do appear to have been more consistent in their manufacturing methods from the 1880s.

<sup>134</sup> The only cameras from the pre-1880 period that have been found to carry a number are those manufactured either by or for Dallmeyer. These frequently carry a three-digit number stamped into the camera. The only extant serial number records from any camera or lens manufacturer are those of Dallmeyer housed at Brent Archives, London. They provided details of the lens type, purchaser and on occasion some additional notes.

Most lens manufacturers who were producing small quantities of relatively high value products serial numbered their output from the outset. This reflected their origins from scientific instrument making where this was standard practice. Two of the three principal British lens makers, Ross and Dallmeyer, recorded their output in some detail.<sup>135</sup> Dallmeyer's ledgers record the type of lens, date and when it was sold together with any subsequent changes.<sup>136</sup>

The very largest camera manufacturers, Thornton-Pickard and Lancaster, did not number their output and clearly saw no commercial benefit in doing so. Eastman Kodak in the United States had adopted standard methods of manufacturing across a vast range of camera models and serial numbered most of their cameras except for the very cheapest amateur box cameras. For certain cameras exported to the United Kingdom a specific model number would also be assigned reflecting a distinctive aspect of manufacture.

#### *Photographic optics*

The ability to interchange lenses and for lens mounting flanges to accept lenses from other manufacturers became more urgent from the 1880s. Amateurs began to use a single camera for different photographic purposes and required lenses suitable for different subject matter such as landscapes and portraits. In this situation the conventional approach was to have multiple lens panels each holding a specific lens, and to change it as required. Lenses from the same manufacturer, let alone between different manufacturers, were rarely interchangeable with mounting flanges being of different diameters and thread pitches. In an effort to reduce the need for different panels, universal lens mounts which used an iris diaphragm arrangement to grip a lens were introduced but these were of limited success. Lens compendium sets were also produced which provided all the lens elements for different focal lengths. A limited

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<sup>135</sup> The third was the firm of Grubb which was based in Ireland.

<sup>136</sup> Lens serial number ledgers, J. H. Dallmeyer company archives, Brent Archives, London.

number of manufacturers produced them but they tended to be expensive. The *British Journal of Photography* editorialised on this issue in 1880 when it called for the introduction of standard lens mounts.<sup>137</sup> Despite this there was little action from lens manufacturers.

The other area of standardisation that was increasingly needed was that of the markings on the lens barrel to indicate its properties. In a paper on photographic lenses read by Leon Warnerke at the Photographic Society in 1882 he described the features of lenses and their influence on the rapidity of the lens. For different lenses to be compared Warnerke argued that: 'a unit for the measuring of this rapidity may be adopted, and that the rapidity of every lens and diaphragm may be calculated, and in a prominent manner marked on the lens mounts or on the diaphragms'. He also made a plea that echoed the *British Journal of Photography*'s earlier comments:

Permit me to express a feeling shared by everybody who uses the camera, either as a hobby or otherwise, of the immense annoyance occasioned by an endless variety of the threads, the size of screws, and lens flanges. Every maker makes his own thread distinctly different from the thread of other makers. Let me express a wish that the example of adopting a uniform thread, so successfully carried out by microscope-instrument makers, may be followed by the makers of cameras and lenses<sup>138</sup>

The result of this was that the Photographic Society established a lens committee to make recommendations on the issues raised by Warnerke.<sup>139</sup> The committee reported back in June 1882 and made a series of proposals. These were grouped under three headings: lens diaphragms, flanges and camera screws. The committee recommended that every lens should be engraved with its approximate focal length and that a standard aperture scale be adopted whereby each aperture would require double the exposure of

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<sup>137</sup> 'A want long felt: a hint to opticians', *British Journal of Photography*, no. 1033, vol. 27, 20 February 1880, p. 86-87.

<sup>138</sup> Leon Warnerke, 'On the rapidity of photographic lenses', *The Journal and Transactions of the Photographic Society of Great Britain*, no. 5, vol. 4 NS, 24 February 1882, pp. 85-89.

<sup>139</sup> The committee consisted of Warnerke, Captain Abney, T. S. Davies, Lieutenant Darwin, J. H. Dallmeyer, W. Bedford, T. M. Brownrigg, W. England, A. Cowan, J. C. Heaviside, J. Stuart and Colonel Stuart Wortley.



the preceding one. With regard to flanges, standards for diameters and screw threads were specified and a series of screws based on the Whitworth standard engineering screw was recommended.<sup>140</sup> The report was accepted by the Society's council which directed that a series of standard flanges and camera screws be constructed and kept in the custody of the Society. They would be made available to manufacturers wanting to adopt them.

The initial impact of the Photographic Society lens standards was mixed. Some lens manufacturers adopted them and made note of this in their advertising. Horne and Thornthwaite noted that it was 'prepared to alter and number the apertures of existing Diaphragms of Photographic Lenses in exact accordance with the Standard Unit of the Photographic Society of Great Britain'.<sup>141</sup> Other firms were more ambivalent and there was widespread dissatisfaction with the Society standards from the manufacturing trade.

The lens standard committee of the Photographic Convention called a meeting of photographic opticians in 1890 to re-consider the subject. The principal objections raised were in the costs associated with re-tooling to conform to the standards. In April some of the principal lens makers, Ross, Beck, Crouch, Dallmeyer, Wray and Swift, met to discuss the standards and to draw up a submission to the Photographic Convention.<sup>142</sup> A series of meetings was held, the outcome of which, as Arthur Haddon reported, was to largely adopt the existing Photographic Society standards with modifications 'in the nature of explanation or amplification of those standards'.<sup>143</sup> This time manufacturers agreed to adopt the proposals, although take up was slow. W. Wray introduced them in 1894.<sup>144</sup> Taylor, Taylor and Hobson noted in the same year that it

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<sup>140</sup> 'Report of the "lens committee" to the Council of the Photographic Society of Great Britain', *The Journal and Transactions of the Photographic Society of Great Britain*, no. 9, vol. 6 NS, 23 June 1882, pp. 174-175.

<sup>141</sup> Advertisement, *British Journal of Photography*, no. 1220, vol. 30, 21 September 1883, p. xi.

<sup>142</sup> 'A meeting about lens standards', *Photographic News*, no. 1652, vol. 34, 2 May 1890, pp. 341-343.

<sup>143</sup> A. Haddon, 'Notes on the report of the lens standard committee', *Photographic News*, no. 1660, vol. 34, 27 June 1890, pp. 501-503.

<sup>144</sup> 'Our editorial table', *British Journal of Photography*, no. 1770, vol. 41, 6 April 1894, p. 219.

would encourage public support of the standards by 'converting to the standards of the Royal Photographic Society the fittings of any lenses which may be sent to us for that purpose'.<sup>145</sup>

Lenses were increasingly marked in a known ratio and consumers were able to buy photographic optics and choose between different manufacturers on a consistent basis. This, coupled with a movement towards standardising the sensitivity of photographic emulsions, meant that amateur and professionals were gradually getting a standardised system of photography. The relationship between the camera's optics, the sensitivity of a photographic emulsion and intensity of the light if applied correctly, would help support amateurs and snapshotters in securing consistent results.

#### *Photographic emulsions: The Paget prize*

Although increasing numbers of dry plates were available commercially from the mid 1870s there had been little progress in improving their sensitivity and, more importantly, their keeping qualities. Dry plates that were kept for long periods of time prior to use generally retained their sensitivity, but those that had been exposed and were processed some time later showed deterioration. The *British Journal of Photography* summed this up succinctly: 'the longer after exposure the development of the latent image is delayed the more surely does such latent image return to – nothingness'.<sup>146</sup> Although dry plates were more convenient than wet collodion for outdoor and travel photography their take up by studio photographers was slow. Where a photographer had a permanent dark room close to where he was taking photographs their advantages were less apparent.

On 7 March 1878 Captain Joseph Paget, a Mansfield landowner and businessman, wrote

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<sup>145</sup> 'Standard lens screws', *British Journal of Photography*, no. 1802, vol. 41, 16 November 1894, p. 739.

<sup>146</sup> 'A fifty-pound prize dry process', *British Journal of Photography*, no. 932, vol. 25, 15 March 1878, p. 121-122.

to the council of the Photographic Society offering a £50 prize to promote progress in the dry plate process.<sup>147</sup> Paget hoped that the prize would act as an encouragement to experimenters to work towards overcoming the loss of sensitivity after exposure and to work towards a general improvement in the dry plate. The Photographic Society was designated to manage the prize and to solicit jurors competent to judge the expected entries. A steering committee consisting of photographers William England and William Bedford and the scientist T. Sebastian Davis was established. It drew up set of guidelines that were published in the Society's journal in April.<sup>148</sup> The conditions of the prize were not onerous and there were no restrictions placed on entries other than that they should contain 'sufficiently accurate details to enable any ordinarily skilful photographer to produce results thereby, equal to those obtainable by the wet collodion process'. The key requirements were that the plates should keep well for four months prior to exposure, emulsions made by the process should keep satisfactorily for three months in any climate between exposure and development, and that the results should be at least equal to the wet collodion process. A closing date for entries was set for 31 March 1879.

In January 1879 the *Photographic News* reiterated the closing date of the competition and the rules of the competition. It also questioned the practicalities of examining the keeping properties of the plates 'in any climate' but was content to leave this to the committee. It did not expect to be able to publish the results for twelve months.<sup>149</sup> The following month the *Photographic News* was able to publish the names of the members

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<sup>147</sup> Joseph Paget (1826-1896) inherited a share of the William Hollins Company in 1873 after the death of his father. He primarily concerned himself with managing Stuffynwood Hall and the surrounding 200 acre estate. He was involved in public office as a JP and in 1892 was appointed High Sheriff of Derbyshire. Paget also inherited his father's estate at Ruddington Grange. See <http://www.stuffynwood.com/> (accessed 22 June 2009). Paget joined the Photographic Society of Great Britain in 1868 and was life member. Contrary to some sources Paget was not knighted, the confusion arising with the surgeon of the same name.

<sup>148</sup> *Journal and Transactions of the Photographic Society of Great Britain*, no. 6, vol. 2 N.S., April 1878, pp. 68-69. The announcement of the prize was also reported in *Photographic News*, 22 March 1878, p. 133, 138-139, which also reported that the idea had been discussed by Paget nearly three years prior to the announcement.

<sup>149</sup> 'The forthcoming dry-plate competition', *Photographic News*, no. 1062, vol. 23, 10 January 1879, p. 18-19.

of the Photographic Society council appointed to serve on the Paget committee. This consisted of Valentine Blanchard, Lieutenant Leonard Darwin, T. Sebastian Davis, Peter Mawdsley and Colonel Stuart Wortley.<sup>150</sup> The competition proved to be more difficult than expected and failed to generate the hoped for response. A terse note in the Society's April journal reported that 'there are two competitors for this prize'. The *Photographic News* noted in July that 'the Paget £50 prize seems to be giving the jurors some difficulty' although it remained confident that the prize would entice more entries in to the public domain.<sup>151</sup>

The committee submitted its formal report to the Society in June 1880 and noted that only two processes had been submitted to the Society for assessment. One was a silver bromo-collodion and the other a silver bromo-gelatine emulsion process. After testing, which included a journey to and from South America, the latter process was deemed superior. The committee requested further details of the process and formulae which, after consideration, was felt to differ so much from the process as initially entered that it represented a new process. Under the circumstances the committee proposed re-opening the competition. A closing date of 1 September was set and an award was to be made at the December meeting of the Society.<sup>152</sup> This was duly done and after considering four submissions the committee awarded the prize to W. J. Wilson of Hammersmith for his process submitted under the name 'Eblana'.<sup>153</sup>

The competition had been designed to stimulate research and to produce a dry plate process with lasting qualities pre- and post- exposure without affecting the latent image. It had been overtaken by events. Nearly three years had elapsed since the prize was first

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<sup>150</sup> 'Talk in the Studio. The Paget Prize', *Photographic News*, no. 1068, vol. 23, 21 February 1879, p. 95.

<sup>151</sup> 'The Paget competition', *Photographic News*, no. 1090, vol. 23, 25 July 1879, p. 349.

<sup>152</sup> 'Report from the committee to the council of the Photographic Society of Great Britain with reference to the prize offered by Joseph Paget, Esq., for a dry-plate process', *The Journal and Transactions of the Photographic Society of Great Britain*, no. 8, vol. 4 (NS), 18 June 1880, pp. 130-131.

<sup>153</sup> 'Paget prize competition', *Journal and Transactions of the Photographic Society of Great Britain*, no. 3, vol. 5 (NS), 24 December 1880, pp. 34-38. It is likely that Wilson's process was also the winner of the previous competition.

offered and the commercial manufacture of dry plates had become established in the intervening years. Consequently no commercial manufacturer was going to risk disclosing a commercially successful process. The *Photographic News* speculated in January 1881 that of the four submitted processes only one was from a professional maker of gelatine plates. Its own conclusion was that the winning process 'was declared in common with the other three to possess no exceptional or remarkable feature of excellence'.<sup>154</sup>

W. J. Wilson, the successful competitor, capitalised on the success of the prize by further refining the process and formed the Paget Prize Plate Company to manufacture plates made to the winning formula (see Illustration 28).<sup>155</sup> The company was a joint venture between Wilson and George C. Whitfield of the Woodbury Permanent Photographic Printing Company. The two firms shared premises until a serious fire stopped production in 1889 after which the Paget company moved to Watford, just outside London, and re-commenced production in 1890. By September 1881 the company was advertising its gelatine plates in the *British Journal of Photography* and *Photographic News* to some acclaim. Other than its emulsions it introduced a number of innovations to commercial plate manufacturing. It developed a new method of packing plates to prevent the sensitised emulsion being scratched. In addition, the company offered to pack plates in tin foil for travel at a small extra cost. From January 1887 it began stamping the date of issue on each box of plates that left the factory in an effort to help retailers more easily rotate stock. The issue of stale plates was a concern of consumers and this was designed to reassure customers that plates were fresh.<sup>156</sup>

The new factory at Watford was purpose built for plate manufacturing and was partly mechanised. Uncoated glass plates were mechanically cleaned by steam-driven brush

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<sup>154</sup> 'The Paget prize', *Photographic News*, no. 1168, vol. 25, 21 January 1881, p. 28.

<sup>155</sup> A summary of the company's history is given in R. J. Hercock and G. A. Jones, *Silver by the ton*, London: McGraw-Hill Book Company, 1979, pp. 100-101. This contains a number of errors but places the company within the wider history of Ilford Ltd.

<sup>156</sup> Advertisement, *Photographic News*, no. 1508, vol. 31, 27 July 1887, p. xvii.

rollers and then rinsed. The coating of the cleaned plates was done by a Cadett coating machine, which had a capacity of 2400 plates per hour. After drying over night the plates were cut into smaller sizes as required, quality checked and then packed into boxes. Differences in pricing were explained by the fact that less sensitive plates used less silver and would be packed into a cheaper form of box. The company stressed that equal care in manufacturing was taken with plates across all price ranges. The factory relied on its own power supplies and had a six horsepower steam engine to produce hot water for heating and other purposes. A gas engine provided motive power. All the water used on the premises was purified and softened, although only distilled water was used for emulsion making.<sup>157</sup> This type of establishment was typical of the new dry plate making factories that were established through the 1890s to mass-produce plates. In them consideration was given to the quality of the inputs into the manufacturing process, the mechanisation of the process and the quality checking of the final product. The Paget company, for example, claimed to reject any plate that was found to have the slightest blemish.

By 1894 the firm had expanded into making photographic printing papers and it became a limited company in 1901 with a nominal capital of £80,000.<sup>158</sup> It continued to develop innovative new products including a colour screen process for both plates and on paper which was sold under the Paget name, although the process achieved limited commercial success.<sup>159</sup>

Until the 1890s most manufacturers of photographic emulsions operated by rule-of-

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<sup>157</sup> 'The Paget Prize Plate factory redivivus', *British Journal of Photography*, no. 1564, vol 37, 25 April 25 1890, pp. 264-265.

<sup>158</sup> The National Archives, Kew, BT31 16704/71246. The Paget Prize Plate Company, Limited. The company was wound up in 1921 after it joined APM Ltd with the return of the final winding up meeting registered on 1 February 1930.

<sup>159</sup> The Paget colour process was patented by G. S. Whitfield in 1912 it was revived in 1926 under the Duplex name. After the First World War the Paget company joined Selo Limited, a film manufacturing venture controlled by Ilford Ltd, in 1920. Paget combined with other manufacturers to form Amalgamated Photographic Manufacturers Ltd in 1921 and it became part of Ilford Ltd, via Apem Ltd, in 1928. The Watford premises remained in use by Ilford Ltd until 1962 and were finally demolished in the early 1980s.

thumb and few had introduced any scientific or manufacturing rigour to their production. This affected the consistency between batches, which was reflected in variations in sensitivity and emulsion characteristics such as grain. For the photographer the sensitivity, or 'speed', of each batch of plates was largely unknown and experimentation was required to determine this on a box by box basis or, if known, on a batch basis. Certainly there was no standard definition of sensitivity that could be applied to help determine exposure. From the 1880s the move towards the mechanisation of manufacture and a more scientific approach to emulsion making which the largest manufacturers adopted introduced a consistency to manufacture and formulae. The benefit of this was seen in the final emulsion.

The work of Ferdinand Hurter and Vero Driffield introduced a scientific approach to sensitometry, or the study of light-sensitive materials. This was achieved through measuring light and the application of careful observations and relating this to the sensitivity of photographic emulsions. Their work led to a series of tables, which, when applied to the known sensitivity of photographic materials, could be used to calculate the exposure required for a particular subject.

The first company to realise the commercial potential of their work was Marion and Company of London. Alerted by an amateur photographer, John Sterry in 1891, the company announced that it would provide numerical values for each of its four brands of plates using Hurter and Driffield's techniques<sup>160</sup>. The company had spent more than twelve months testing Hurter and Driffield's method and described what it was proposing and the benefit to consumers: 'We therefore issue all our Plates with the speed numbers marked on each box, consequently failures arising from faulty exposures are reduced to a minimum'.<sup>161</sup> Other manufacturers also took up the system and Marion and Company, writing to the *British Journal of Photography* in February 1893, noted:

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<sup>160</sup> See: R. M. Callender, 'The enthusiastic amateur of Redhill, Surrey', *Early Popular Visual Culture*, vol. 7, no. 3 (2009), pp. 273-294, for a discussion of Sterry, Marion and Co., and Hurter and Driffield.

<sup>161</sup> Advertisement, *British Journal Photographic Almanac 1893*, London: Henry Greenwood and Co., 1893, p. 4.

'we may add, five English plate-makers, besides ourselves, one American, and one Belgian, have purchased Messrs. Hurter & Drifffield's photometer for determining the speed of plates'.<sup>162</sup> A number of rival systems were also devised, such as the Watkins tables but by the early 1900s the H. and D. system was the most widespread. All these systems supported the development of instruments such as actinographs and meters which aimed to make exposure measurement simple and easy to undertake (see Illustration 30).

For the amateur, the ability to measure light and apply it to the known sensitivity of a plate or film removed the last variable in determining photographic exposure. For firms marketing their films to snapshotters the ability to produce plates or films to a known speed meant that general directions regarding exposure could be given which would allow a passable negative to be made, resulting in acceptable prints. Used with a camera that helped the snapshotter keep it steady and to frame and focus accurately, the photographer could be assured of producing a technically acceptable result.

Producing plates and films with a consistent speed now meant that simpler cameras with a limited number of controls could be manufactured. Standardising the act of making the photograph was important for the snapshotter. In the case of the simplest box cameras this meant that the photographer had a single shutter speed and fixed aperture, and only needed to fire the camera's shutter and advance the film. Improved emulsions and cameras with limited controls would provide a reasonable result in sunlight. Certainty of result was a key factor in opening up photography to the snapshotter.

## **Patents and photographic innovation**

### *Background*

The role of the patent and patent law exercised the pens of numerous journal editors and

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<sup>162</sup> Correspondence, *British Journal of Photography*, no. 1710, vol. 40. 10 February 1893, p. 94.



contributors to the photographic press, with two opposing views. For some it was seen as a restriction on trade and for others it was a mechanism to encourage technical development and allow a patentee to profit from an invention. Both arguments were rehearsed in the photographic press throughout the nineteenth and early twentieth centuries.

Britain's patent law had evolved since the seventeenth century. By the early nineteenth century and the introduction of photography there was a widespread view that it was in desperate need of reform. The Great Exhibition of 1851 acted as a catalyst for a major government review that had been demanded by commerce. Manufacturers and patentees had long sought greater commercial protection in the face of growing foreign competition, especially with the knowledge that foreign competitors could manufacture goods comparable to those made in Britain. The exhibition would showcase British goods to overseas manufacturers who were potential competitors. The resulting legislation, the 1852 Patent Act, set the basis for Britain's modern patent law. It replaced separate patent systems in England and Wales, Scotland and Ireland but only partially met the demands of reformers. It was enacted after the Exhibition had opened.<sup>163</sup>

Despite the 1852 Patent Act the *Photographic News* in 1860 ran an editorial which bemoaned the continued expense and difficulty of obtaining a patent, issues that the Act had been designed to resolve.<sup>164</sup> A new Patents, Designs and Trade Marks Act in 1883, addressed some of those concerns and codified other areas of intellectual property law. It failed to address the fact that, unlike the American patent system, the British system did not require a patentee to show novelty. As a result many patents were simply variants on existing designs rather than a novel design for apparatus, a chemical

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<sup>163</sup> Klaus Boehm, *The British Patent System. I. Administration*, London: Cambridge University Press, 1967, pp. 14-37.

<sup>164</sup> 'The cost of a patent', *Photographic News*, no. 113, vol. 4, 2 November 1860, pp. 313-314.

processes or application of photography.<sup>165</sup> The *Photographic Review of Reviews* in 1895 bemoaned this taking an example from the 1850s and noting:

We thus see that this colouring of photographs by daubing pigments in oil on the back of the paper after rendering it transparent with varnish, was allowed to be patented by three different individuals within a period of thirteen months, the Patent Office pocketing the fees without a blush.<sup>166</sup>

In Europe markedly different patent systems were in operation. France had established a modern patent system by 1844 with a simple registration and the state acting as an active partner in managing patents and in their exploitation. In Germany national patent legislation was passed in 1877 with the specific aim of encouraging economic development. Switzerland and the Netherlands, for a period, both took the view that patents were not morally acceptable, and it was not until 1888 and 1912 respectively that these countries reinstated patent systems – mainly in response to international pressure. Elsewhere, Japan had in 1886 reviewed the various European and American patent systems and its first patent law was passed in 1888. It copied many of the features of the American system, which it considered superior to those operating in Europe.<sup>167</sup> British photographic manufacturers particularly made use of the American and German systems to protect their inventions in those countries.

#### *The photographic press and patents*

The British photographic press actively reported on issues associated with the patent system. At the basic level there was the question of whether it was even acceptable to have a system of monopolistic protection. While there were occasional calls to abolish patents altogether they were never seriously supported by the photographic press. Thomas Sutton, himself a patentee, ran an extract in *Photographic Notes* from the

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<sup>165</sup> Oliver E. Allen, 'The Power of Patents', *American Heritage*, vol. 41, 6 (September/October, 1990) / <http://www.americanheritage.com/articles/magazine/ah/1990/6/> (accessed 21 June 2007) provides a useful survey of the American patent system.

<sup>166</sup> 'Our Patent Office', *Photographic Review of Reviews*, vol. 4, September 1895, pp. 312-313.

<sup>167</sup> B. Zorina Khan, 'An Economic History of Patent Institutions', <http://eh.net/encyclopedia/article/khan.patents> (accessed 1 January 2008) provides a survey of different patent systems on which this section was partly based.

*Saturday Review* in 1861 supporting patent monopoly which he said 'embodies our own views exactly'.<sup>168</sup> John A. Randall raised the same issue nearly forty years later and Alfred Watkins, another photographic patentee, was quick to support the concept of patents.<sup>169</sup> The issue of protection for manufacturers and economic dominance became more important throughout the century as Britain's economic position weakened relative to that of America and Germany. Patent reform to reduce the cost of securing a patent, to establish international protection for British patentees and to provide for some form of novelty search were aims which the photographic press fully endorsed.

By the later part of the nineteenth century the main photographic trade periodicals considered reporting patent matters a key part of their remit. The *British Journal of Photography* and, later on, *The Photogram* regularly described new patents and published extracts on their pages. In 1879 the *Photographic News* felt the issue of patents was of such importance that it stated:

To Correspondents. Patents, Trade-Marks, &c.—We have made arrangements to answer through our columns any questions which may be addressed to us respecting patenting inventions and the registration of trade-marks and designs. As these subjects are of growing interest and importance, we invite all our readers in doubt on any point to write to us. It is almost needless to say we make no charge.<sup>170</sup>

Changes to British and international patent law were regularly reported and given prominence in news and correspondence columns, and the annual reports of the Comptroller-General of Patents were editorialised.

#### *Photographic patent activity*

The first photographic patent in England and Wales was granted to Miles Berry, a well-known patent agent, on behalf of Louis Jacques Mandé Daguerre and Joseph Isidore Niépce, junior, on 14 August 1839. Over the course of the next sixty years to 1900 some

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<sup>168</sup> *Photographic Notes*, no. 131, vol. 6, 15 September 1861, pp. 261-264.

<sup>169</sup> John A. Randall, 'Photography by Patent', *British Journal of Photography*, no. 2009, vol. 45, 4 November 1898, p. 832; 'Correspondence', *British Journal of Photography*, no. 2010, vol. 45, 11 November 1898, p. 735.

<sup>170</sup> *Photographic News*, no. 1077, vol. 23, 25 April 1879, p. 204.

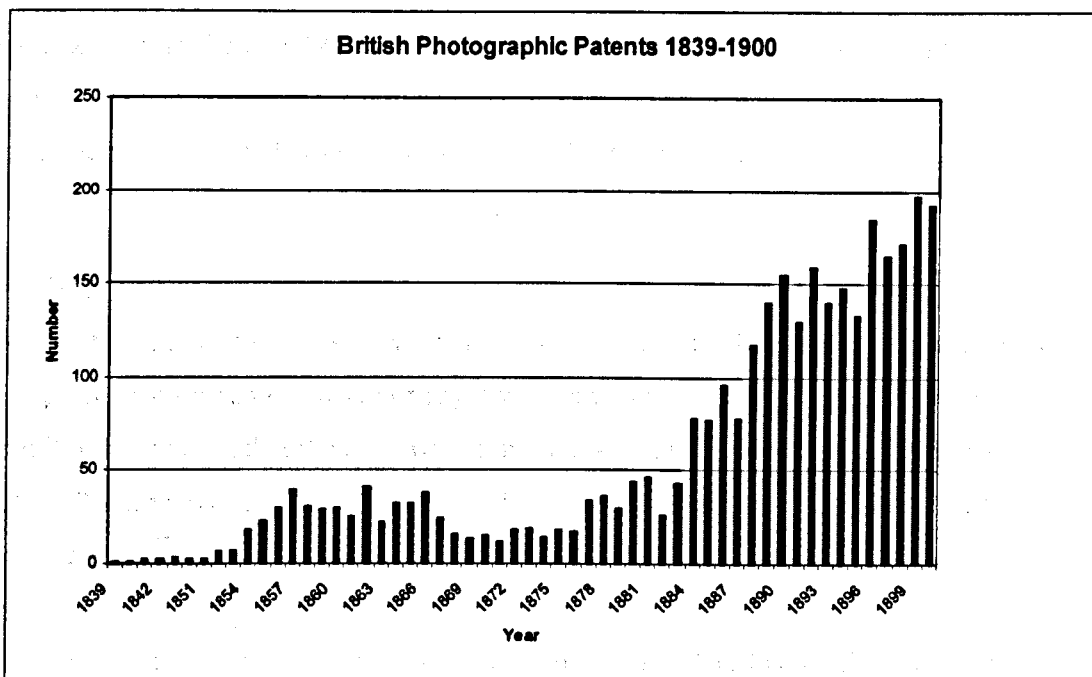


Figure 7. British photographic patent activity 1839-1900. *Source: Patent Office.*

3209 photographic patents were granted.<sup>171</sup> Patent activity over this period was not consistent and as Figure 7 shows there was a general increase in patent activity throughout the period. There were marked increases after the 1852 and 1883 Acts, reflecting the simplification of the application process and the reduction in the cost of securing a patent that both Acts brought.

Photographic patents showed a steeper rise in the rate of patent activity than for British patents as a whole. This, I would argue, suggests that photography had particular factors associated with it that attracted patentees. The failure of Talbot to substantiate his claim to the collodion process, which held back other experimenters for several years, freed

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<sup>171</sup> In Britain, unlike the United States, there was no sequential numbering of patents until 1916 when numbering commenced at 100,001. Until then patents were numbered from one on an annual basis. The number of 3209 is a count of the patent abridgements from 1839 to 1900. It is approximate as some patents that might be considered photographic were included in other classes of patents and the photographic class included patents that are clearly not photographic, for example, for emulsifying milk. The writer has compiled a searchable database of all British photographic patents from 1839-1900. As part of this each patent has been categorised to give visibility to some of the detailed trends in patent activity.

up this area from the mid-1850s. Similarly in the 1880s the development of dry plates and portable hand cameras were linked to the dramatic growth of amateur photography, which reciprocally acted as an additional incentive to inventors.

#### *Patent exploitation*

It was not simply enough to secure a patent. A method of exploiting or licensing it to a third party on either an exclusive or royalty basis was needed for the patentee to profit from it. It is apparent that the over-whelming majority of British patents between 1839 and 1900 were never exploited commercially. Around 15 per cent were developed commercially.<sup>172</sup>

The daguerreotype patent which was licensed to Richard Beard is the first example of the commercial exploitation of a photographic patent and has been well-covered in the literature.<sup>173</sup> Beard negotiated with his sub-licensees on an individual basis to issue regionally-based licenses and, on occasion, he would also require a royalty on each portrait taken. Talbot's calotype process was the subject of a patent in 1841 and was licensed to photographers. Henry Collen, Talbot's first licensee, was required to pay Talbot 30 per cent of his takings. During the three years Collen worked as a calotypist the total amount due to Talbot did not exceed £200.<sup>174</sup> Both processes had the novelty associated with the discovery of photography and by the 1850s there was greater commercial realism associated with photographic patents and in their potential value when exploited.

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<sup>172</sup> It is difficult to quantify just how many patents were exploited commercially as they are often difficult to identify from surviving equipment or materials. From the writer's database of British photographic patents to 1900 and detailed knowledge of British photographic history it would seem likely that fewer than 15 per cent enjoyed any commercial success.

<sup>173</sup> See: Bernard & Pauline Heathcote, *A Faithful Likeness. The First Photographic Portrait Studios in the British Isles 1841 to 1855*, Lowdham: Bernard & Pauline Heathcote, 2002; B. V. & P. F. Heathcote, 'Richard Beard: An Ingenious and Enterprising Patentee', *History of Photography* vol. 3, 4 (October 1979), pp. 313-329; R. Derek Wood, 'The Daguerreotype in England: Some Primary Material Relating to Beard's Lawsuits', *History of Photography*, 3, no. 4 (October 1979), pp. 305-9; <http://www.midley.co.uk/> (accessed 01 January 2008).

<sup>174</sup> H. J. P. Arnold, *William Henry Fox Talbot*, London: Hutchinson Benham Ltd., 1977, pp. 138-141.

Some patentees were able to exploit their own patents and undertook the manufacture of their invention. Thomas Grubb's improved photographic lens 'was manufactured under the license and supervision of the patentee, by his son, Mr Henry T. Grubb'.<sup>175</sup> The Autotype Company manufactured the materials needed to produce autotypes and authorised other manufacturers to do this same. In an 1877 advertisement it stated that Marion and Company is 'empowered to manufacture patent carbon tissue and transfer papers', and it took a royalty from such sales.<sup>176</sup> The plate maker B. J. Edwards, who was always quick to protect his patent rights, stated: 'we have made arrangements for granting sub-licences to photographers who may desire to prepare their own isochromatic plates' while at the same time producing his own plates for sale.<sup>177</sup>

In the 1890s the patentee Arthur Newman entered into partnership with Julio Guardia to manufacture cameras and shutters 'under the well-known Newman patents, the exclusive rights to which they hold'.<sup>178</sup> With the Thornton-Pickard company, John E. Thornton was the initial patentee and inventor with Edgar Pickard providing the business acumen and financial backing to commercialise them.<sup>179</sup>

#### *Licensing and purchasing patent rights*

From reports and advertisements in the photographic press it seems that licensing was often the preferred means of exploiting a patent. This had the advantage that the patentee had no capital outlay in setting up manufacturing facilities and could pass on the responsibility for commercial success to the licensee. If a royalty was involved the patentee had a vested interest in promoting the product and all patentees had an interest

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<sup>175</sup> Advertisement, *Photographic News*, no. 32, vol. 2, 15 April 1859, p. v. This relates to British patent number 2574 of 1857.

<sup>176</sup> Advertisement, *British Journal of Photography*, no. 898, vol. 24, 20 July 1877, p. vii.

<sup>177</sup> 'Correspondence', *British Journal of Photography*, no. 1448, vol. 35, 3 February 1888, p. 80.

<sup>178</sup> *British Journal of Photography*, no. 1649, vol. 38, 11 December 1891, p. 800.

<sup>179</sup> Douglas A. Rendell, *The Thornton-Pickard Story*, Prudhoe: Photographic Collectors Club of Great Britain, 1992, pp. 6-11.

in protecting their invention from being illegally copied. Some were involved in licensing directly, for example, D. A. Woodward, the patentee of the solar camera used for enlarging gave John Atkinson of Liverpool the right to manufacture it but retained the licensing: 'No camera will be sold or used without being accompanied by a printed or written License to use the same, signed by D. A. Woodward, Patentee'.<sup>180</sup> The validity of Woodward's patent was questioned and was subsequently allowed to lapse.<sup>181</sup> Arthur J. Melhuish patented the first metal bodied camera which he had made for him while he retained control of the selling and distribution of the camera.<sup>182</sup>

Other patentees tried advertising to secure a partner to exploit their patent. In 1859 Mr Hartt placed an advertisement in *Photographic News*:

To photographic dealers and manufacturers. The inventor of important improvements in Photographic Apparatus is desirous of finding a Party to complete and make for the invention, which has already received provisional protection. For particulars, apply to the Inventor, Mr Hartt, Horncastle, or Mr Spence, Patent Agent, 50 Chancery Lane, E.C.<sup>183</sup>

Thomas Sutton was prepared to license the manufacture of his 'New Instantaneous and Portrait camera' to 'any of the first class firms' on 'reasonable terms'.<sup>184</sup>

The early photographic processes were frequently licensed although there were wide variations in the charges made. As early as 1855 A. Rollason was advertising his collodion transfers and inviting applications for licenses:

The patentee will grant licenses to public operators at £5 per annum; and to

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<sup>180</sup> Advertisement, *British Journal of Photography*, no. 109, vol. 7, 1 January 1860, p. ix.

<sup>181</sup> 'The Solar Camera', *Photographic News*, no. 146, vol. 5, 21 June 1861, p. 289. Woodward's patent was number 2459 of 1857.

<sup>182</sup> A. J. Melhuish, 'The Patent Metal Camera', *British Journal of Photography*, no. 109, vol. 7, 1 January 1860, p. 5-6. One example of the camera is known and was offered at Christie's auction house and is now part of the collection of the National Media Museum, Bradford.

<sup>183</sup> Advertisement, *Photographic News*, no. 49, vol. 2, 12 August 1859, p. iii. This may relate to British patent 1139 of 1859 by Frederic William Hart [sic] for a photographic printing frame.

<sup>184</sup> Advertisement, *Photographic Notes*, no. 131, vol. 6, 15 September 1861, n.p.

amateurs, upon the receipt of one guinea for practical instructions, he will grant a permit, and will otherwise meet the photographic public in a liberal spirit.<sup>185</sup>

The Autotype Company wrote in 1877 that 'we have 363 licensees on our books' without specifying the price of a license, but claimed terms were 'not onerous'.<sup>186</sup>

Alfred Harman was prepared to grant licenses to operate his process for finishing enlargements. This was the subject of an 1878 patent and advertised: 'charge for licence and instruction, 10 guineas'<sup>187</sup> A successful invention could be very profitable. B. J. Edwards, at the height of the demand for dry plates, held a key patent for a plate-coating machine which *Scientific American* made note of:

...the ingenuity of our friend, Mr B J Edwards, whose plate-coating machine figures in so many dry-plate factories. We are told that "Mr Edwards rents out on royalty twenty of his patented plate-coating machines at a yearly rent of 500 dols. Per machine. One company uses five of them. Mr Edwards was a photographer, knew the needs, and applied his inventive ingenuity, finally accomplishing a successful result..."<sup>188</sup>

Licences for using Squire and Co.'s Elephanton process for colouring photographs were available at five guineas each.<sup>189</sup> Unusually this made no distinction between amateur and professional use, probably because there was an assumption that it would only be operated by professionals. More usually patentees differentiated between professional and amateur use in the fees they charged. Professionals were more likely to pay for a process that might give them commercial advantage. A small, or no charge, to amateurs was preferable than nothing, especially if there was the opportunity to sell them the materials they needed to operate the process.

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<sup>185</sup> Advertisement, *Liverpool Photographic Journal*, no. 12, vol. 2, 10 November 1855, n.p.

<sup>186</sup> Letter from the Autotype Company, *British Journal of Photography*, no. 905, vol. 24, 14 September 1877, p. 443. The Autotype Company had itself purchased from John Robert Johnson and Ernest Edwards their interest in a contract with the patentee of the carbon printing process, Joseph Swan. The company's letter was a stout defence of their patent rights and licensing methods in response to comments made by the *BJP*'s contributor 'A Peripatetic Photographer'.

<sup>187</sup> British patent no. 2174 of 1878. See also: Advertisements, *Photographic News*, no. 1031, vol. 22, 7 June 1878, p. vii.

<sup>188</sup> *British Journal of Photography*, no. 1928, vol. 39, 16 August 1895, p. 519. The *BJP* was quoting from a paragraph headed 'Royalties' which appeared in *Scientific American*.

<sup>189</sup> Advertisement, *Photographic News*, no. 171, vol. 5, 13 December 1861, p. i.



The *British Journal of Photography*, in editorial comment on the wothlytype process noted:

We believe that it is now contemplated by the Directors of the United Association of Photography, Limited, to make a single charge of ten guineas to professional photographers desirous of using the Wothlytype process; but that no charge will be made to amateurs who use it solely for themselves, and not for profit. We also understand that the prices to be charged for materials, together with full particulars, will be given next week.<sup>190</sup>

It had limited success. The platinotype process, which was much more successful, was also licensed and from 1882 the Platinotype Company charged a modest fee of five shillings to both professional and amateurs.<sup>191</sup> By 1889 the company advertised 'no license is now required for printing on the patented sensitised papers manufactured by the Platinotype Company'.<sup>192</sup> The popularity of the process and resultant profit on the sale of chemicals and papers had become more significant. The need for a licence acted as a barrier to those sales.

From the 1880s fewer photographic processes were patented. The rise of amateur photography had made the supply of chemicals and materials for home use more important and there were no new processes of general importance introduced. One of the first significant photographic developers patented was the subject of British patent 5207 of 26 March 1889 with the chemical compound being sold under the trade name Eikonogen.<sup>193</sup> Marion and Company of London had the new developer for sale by July and it was an instant success attracting much editorial comment and correspondence in

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<sup>190</sup> 'Wothlytype Process', *British Journal of Photography*, no. 235, vol. 11, 4 November 1864, p. 441. The wothlytype process was the subject of patent no. 2347 of 1864 and used uranium salts to produce a photographic image.

<sup>191</sup> Advertisement, *British Journal of Photography*, no. 1131, vol. 29, 6 January 1882, p. vii.

<sup>192</sup> Advertisement, *British Journal of Photography*, no. 1504, vol. 36, 1 March 1889, p. ii.

<sup>193</sup> Granted to M. Andresen, a chemist employed by the German firm Aktien-Gesellschaft für Anilin-Fabrikation, later known as Agfa. The patent abridgement summarised the patent as: 'relates to a developing solution the essential portion of which consists of diamido-naphthalene, amidonaphthol, dioxynaphthalene, or their sulpho acids. One or more of these substances may be used'.

the photographic press.<sup>194</sup> Manufacturers in Germany claimed priority with their own chemical formulae and by 1893 these disputes had been resolved:

We are requested to note that the patent disputes between the manufacturers of amidol, metol, glycin, diamidophenol, &c., have been settled amicably by mutual consent, and in future the sale of these developers in Britain and the Colonies will be effected through Messrs. Fuerst and Messrs Arthur Schwarz, in London, being sole agents for Professor Hauff, of Fuerbach, and Dr Andresen, of Berlin, respectively, All photographic dealers will now supply these developers.<sup>195</sup>

German patentees, reflecting the growth of the German chemical industry, were increasingly evident in patenting in Britain chemicals for photographic use from the 1890s.

Instead of acting as a licensee, Lampray and Company bought out the entire patent for sensitised paper by Thomas Sutton for a modest £10. The firm was the London agent for the paper advertising: 'Sutton's patent albumenized paper... Manufactories – Hammersmith, Westminster, & Jersey'.<sup>196</sup> When Messrs Ordish and Company began advertising the same paper and claimed to be sole agents for its sale Lampray claimed this was 'entirely false...[and] I have instructed my solicitor to take the necessary proceedings to punish the authors'. He stated:

I bought Mr Sutton's patent years ago for £10, and, in addition, I paid his patent agent's bill. Subsequently Mr Sutton was employed by me for several years in giving the paper its preliminary coating before I placed it in the hands of my work-people for albumenising<sup>197</sup>

Patents that could no longer be successfully exploited were sold on where possible, as the *British Journal of Photography* reported: 'we are informed that Messrs R. W. Thomas & Co. have disposed of the patent rights of the Sandell plate for Germany to a

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<sup>194</sup> Advertisement, *British Journal of Photography*, no. 1524, vol. 36, 19 July 1889, p. xix.

<sup>195</sup> 'Notes', *Photographic News*, no. 1807, vol. 37, 21 April 1893, p. 242.

<sup>196</sup> Advertisement, *British Journal of Photography*, no. 265, vol. 12, 9 June 1865, p. vii.

<sup>197</sup> T. Lampray, 'Sutton's Patent Albumenized Paper', *British Journal of Photography*, no. 768, vol. 22, 22 January 1875, p. 48. Letter from Thomas Sutton, *British Journal of Photography*, no. 770, vol. 22, 5 February 1875, p. 71.

firm of German plate makers'.<sup>198</sup> With a failing company patents were often seen as important assets. When McKellen Limited, was sold in 1901 the buyer, Richard H. Risk purchased: 'The stock of cameras and other photographic goods, with the machinery and all patents, belonging to the firm'.<sup>199</sup> In reality many patents had limited potential for commercial exploitation and added little value to a company's asset base.

In the case of Taylor, Taylor & Hobson, which was primarily a lens manufacture and optical engineer rather than a camera maker, the Newman and Guardia company took over their patent for a reflex camera, to which they made further improvements. The camera was marketed as the Princess reflex where it extended Newman and Guardia's own camera range.<sup>200</sup> On occasion a patentee, having initially worked a patent, would set up a separate company to take over the rights:

We are informed that the Tella film camera having proved such a great success, Messrs Adams & Co. have sold the patent rights to the Tella Camera Company, Limited, who will shortly open convenient premises at 110, Shaftesbury-avenue, with a full stock.<sup>201</sup>

In this case A. L. Adams, the patentee and owner of Adams & Co., remained a director of the new company. In one instance, Alfred Watkins, having initially licensed R. Field & Company of Birmingham to produce his exposure meters, bought out their licence and established his own company to manufacture his invention:<sup>202</sup>

Mr Alfred Watkins has purchased from Messrs R Field & Co., Suffolk Street, Birmingham, their interest as licensees, their goodwill, and all book debts

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<sup>198</sup> 'News and Notes', *British Journal of Photography*, no. 1766, vol. 41, 9 March 1894, p. 154. The Sandell patents had a chequered history with Sandell himself establishing two companies to exploit his patents, both of which had limited commercial success and ultimately failed.

<sup>199</sup> *Photographic News*, no. 295, vol. 45, New Series, 23 August 1901, p. 543.

<sup>200</sup> 'Taylor, Taylor & Hobson Reflex Cameras', *British Journal of Photography*, no. 2540, vol. 56, 8 January 1909, p. 27. TTH's remaining stock of cameras were sold off at a reduced price 'and in the meantime the new model, with improvements, is receiving the attention of Messrs Newman and Guardia, at the their works, and should be ready in the course of a very short time'

<sup>201</sup> 'Ex cathedra', *British Journal of Photography*, no. 2023, vol. 46, 10 February 1899, p. 82.

<sup>202</sup> Alfred Watkins (1855-1935) undertook a great deal of work into exposure and development establishing the Watkins Meter Company in Hereford to sell devices which embodied his ideas. He was awarded the Royal Photographic Society's Progress Medal in 1910.

relating to the Watkins's exposure meters and eikronometer, and will carry on the business at the Imperial Mills, Hereford, under the title of the Watkins' Meter Company.<sup>203</sup>

#### *Patent protection and legal actions*

The commercial exploitation of a patent could be problematic. For those patents which were being successfully worked then protecting them from unlicensed use was necessary to preserve financial success. However, legal action was both expensive and often unsatisfactory. This was compounded by the lack of a requirement to show novelty in British patents which led to frequent disputes between patentees.

The 1864 case of *Rouch v. How* attracted considerable attention in the photographic press. The *British Journal of Photography* reported:

The case of *Rouch v. How* although not of the same importance to professional photographers [as *Talbot v. Laroche*], is of more importance than the other to manufacturers of, and dealers in, photographic apparatus, all of whom must feel to a certain extent indebted to these two gentlemen – both of them manufacturers and dealers of reputation – for coming forward to fight a battle from which all may derive experience<sup>204</sup>

Although it was not directly relating to a patent, it related to a registered design, the case was important because it showed the importance increasingly being given to intellectual property rights. As the early Beard and Talbot cases in the 1850s had shown patents were potentially a serious affair with financial consequences for the patent owner and effects on the wider industry.

There were a number of later legal cases where patentees tried to assert their rights. In 1871 B. J. Edwards, who fought a number of court cases to protect his patents, undertook the first of these against Colonel Stuart Wortley. Edwards was seeking to protect his patent combination printing frame which he was having made by the camera

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<sup>203</sup> *Photographic News*, no. 254, vol. 44, New Series, 9 November 1900, p. 738.

<sup>204</sup> 'The recent trial for alleged piracy of the design of a registered tent', *British Journal of Photography*, no. 218, vol. 11, July 8 1864, p. 230.

maker Patrick Meagher from alleged copying. The case, which had been threatened for several months, was concluded in December 1871. After extensive submissions the Vice-Chancellor declared the patent invalid as Edwards had 'not given such a definite indication of the exact points that he claimed as novel to make his patent good; the improvement had not been described nor had the novelty been defined'.<sup>205</sup>

Edwards sought to protect what was a far more valuable patent for his plate coating machine in 1884 after he was criticised by another plate maker, Samuel Fry. Fry had claimed Edwards was trying to patent a machine that was already in use. Edwards defended his patent with the justification: 'I may add that the number of applications I have already received from plate-makers in various countries is alone sufficient evidence of the novelty and value of my invention'. He secured his right to the patent and in an extensive advertisement for the machine, which strongly highlighted the fact it was patented, he offered an annual licence or hire of the machine and warned against infringement. The machine was widely adopted and claimed to be 'successfully worked by the principal Dry-Plate Manufacturers in Great Britain and on the Continent'.<sup>206</sup> As *Scientific American* noted in 1895 Edwards enjoyed a significant income from its exploitation.

Edwards also had a dispute with a firm manufacturing an orthochromatic emulsion for which he held the sole rights for 'Great Britain and the Colonies' from the patentees Attout and Clayson.<sup>207</sup> The infringers settled without resorting to court and discontinued production of their own orthochromatic plates.<sup>208</sup>

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<sup>205</sup> 'Edwards's patent combination printing-frame', *British Journal of Photography*, no. 605, vol. 18, 8 December 1871, pp. 576-577.

<sup>206</sup> Letter from Samuel Fry, *British Journal of Photography*, no. 1271, vol. 31, 12 September 1884, p. 590; Letter from B. J. Edwards, *British Journal of Photography*, no. 1272, vol. 31, 19 September 1884, pp. 606-607; Advertisement, *British Journal of Photography*, no. 1336, vol. 32, 11 December 1885, supplement. The Edwards patent at issue was number 8643 of 1884.

<sup>207</sup> Advertisement, *British Journal of Photography*, no. 1392, vol. 34, 7 January 1887, supplement. The original patent was number 101 of 1883 for sensitised plates.

<sup>208</sup> Advertisement, *Photographic News*, no. 1482, vol. 31, 28 January 1887, p. v.

There were two further notable patent cases over photographic patents which both involved the London firm of Shew. The 1892 case *Skinner & Co. v. Shew & Co.* related to the design of a hand camera which had been the subject of a Shew patent.<sup>209</sup> The second in 1896 *Shew v. The Société des Lunetiers* involved the latter's infringement of Shew's patent for the Eclipse camera.<sup>210</sup> In the first case, Skinner took action against Shew after being threatened over a new hand camera which they had asked the London Stereoscopic Company to make for them and which Shew claimed infringed its 1884 and 1885 patents. Shew lost the case over a point of law. In the second case Shew sued over infringement of their design and won. The Eclipse camera, as well as the French copies, were very successful designs of hand cameras amongst amateurs (see Illustration 22).

A dispute over patents relating to reflex cameras in 1910 also ended in court. George Nicholls claimed damages against A. Kershaw & Son of Leeds. Nicholls had patented a reflex mechanism in 1904 which was built into cameras made by Spiers and Pond and sold by several firms from December 1907. Kershaw's own patent of 1904 was included in a camera that was made by them and sold by several British firms, principally Marion & Company as the Soho reflex. Judgment was given for Kershaw as the court ruled that there had been no patent infringement.<sup>211</sup>

Rather than resorting to court actions, which could be expensive, public apologies were often solicited instead. In 1864 the photographic optician J. H. Dallmeyer forewent legal proceedings and obtained an apology from Charles Burr for substituting Dallmeyer

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<sup>209</sup> 'An important Patent law case', *British Journal of Photography*, no. 1679, vol. 39, 8 July 1892, pp. 441-442.

<sup>210</sup> 'Ex Cathedra' and 'Important patent case', *British Journal of Photography*, no. 1894, vol. 43, 21 August 1896, p. 529 and pp. 539-540. 'Legal', *The Photographic Dealer*, August 1896, pp. 58-59.

<sup>211</sup> 'Reflex camera lawsuit', *British Journal of Photography*, no. 2594, vol. 5721, 21 January 1910, pp. 52-53, 57; no. 2595, 28 January 1910, pp. 60-61, 72-73. 'Nicholls v. Kershaw', *Reports of patent design, trade mark, and other cases*, vol. 27, no. 10, London: H.M.S.O., 1910, pp. 237-251.

lenses for his own.<sup>212</sup> In 1888 W. J. Lancaster of Birmingham received a public apology in the photographic press from another Birmingham camera manufacturer, Shaw, for infringing his 1887 patent for 'Improvements in Photographic Cameras'.<sup>213</sup> In 1903 E. Merck of London unwittingly infringed John J. Griffin and Son's patent for packaged photographic chemicals and was able to make 'arrangements with Messrs John J. Griffin and Sons, which enables me to continue the supply of photographic chemicals in cartridges with glass partitions'.<sup>214</sup>

Photographic patentees also advertised the threat of legal proceedings against patent infringers. R. W. Thomas, in his advertisement for his patent box tent in 1865 stated: 'Caution to Manufacturers and others. Proceedings in Chancery will be taken against any person or persons infringing Mr Thomas's Patent...'<sup>215</sup> James Cadett advertised:

The patentee having received intimation that his rights are being infringed, We are instructed to take immediate proceedings against any person or persons making or selling photographic apparatus actuated in any way by pneumatic appliances. Fitch & Fitch,.. solicitors for Mr Cadett.<sup>216</sup>

In both cases, despite many apparent copies of both patents, no legal action appears to have been taken.

A failure to complete the patent process could also have an impact on a patentee's exploitation of it. W. J Stillman claimed to have invented and taken out a provisional patent for a design of a folding baseboard on a camera. He sent drawings to the camera maker Patrick Meagher who reported that the design was not workable. The camera was

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<sup>212</sup> Advertisement, *British Journal of Photography*, no. 216, vol. 11, 15 June 1864, p. v. Burr was made to take out advertisements in the *BJP* and *Photographic News* apologising for the passing off of goods.

<sup>213</sup> Advertisement, *Photographic News*, no. 1541, vol. 32, 16 March 1888, p. xii. Shaw's apology was made in front of a solicitor and was advertised in four journals.

<sup>214</sup> Letters to the editor, *Photographic Notes*, no. 383, vol. 46, New Series, 1 May 1903, p. 286.

<sup>215</sup> Advertisement, *Photographic News*, no. 351, vol. 9, 26 May 1865, p. vii. Thomas's patent for 'Developing-tents and the like' was number 2122 of 29 August 1864. There were a number of manufacturers producing similar devices and the threat of action was probably made explicit as any court case to uphold his patent would have been expensive and difficult to win.

<sup>216</sup> Advertisement, *Photographic News*, no. 1205, vol. 25, 7 October 1881, p. x.

eventually made by George Hare. Stillman was 'subsequently to see the camera as later constructed by Mr Hare in Meagher's catalogue without any credit'.<sup>217</sup> As the patent had not been completed there was little action he could take against Meagher.

In one case dating from circa 1858, E. Edwards, a patent agent, who did not patent his design for a stereoscopic camera still benefited when he was approached by the photographic manufacturer W. W. Rouch who had made his prototype: 'Mr Rouch obtained my consent to continue the manufacture of this apparatus, and supplied a considerable number, not without pecuniary advantage to myself'.<sup>218</sup> The opposite applied to Henry Proctor who in 1887 noted that he had made a detective camera similar to one recently patented by A. S. Newman. He had made no patent application and therefore had no grounds to complain.<sup>219</sup>

More significant was the Rowsell graphoscope for viewing photographs and stereographs which became extremely popular in the later 1860s and 1870s. C. J. Rowsell's patent number 270 of 1 February 1864 for 'Improvements in Apparatus for Viewing Photographs' was never completed and Rowsell consequently lost out on the popular success of the graphoscope. The camera maker George Hare of London was said to be the most extensive manufacturer of graphoscopes in Europe.<sup>220</sup> Summarising the situation, the *British Journal of Photography* stated:

Some of our metropolitan camera-makers having added to their usual branches of manufacture the production of an article now known as a "graphoscope", Mr Rowsell has written to a contemporary stigmatising such conduct as unfair and dishonest.... Mr Rowsell did not complete his patent and the graphoscope has, therefore, become the property of the public<sup>221</sup>

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<sup>217</sup> Letter from W. J. Stillman, *British Journal of Photography*, no. 1964, vol. 44, 24 December 1897, p. 832.

<sup>218</sup> Letter from E. Edwards, *British Journal of Photography*, no. 609, vol. 19, 5 January 1872, p. 5.

<sup>219</sup> Letter from Henry R. Proctor, *British Journal of Photography*, no. 1413, vol. 34, 3 June 1887, p. 351.

<sup>220</sup> 'The Graphoscope', *British Journal of Photography*, no. 564, vol. 18, 24 February 1871, pp. 84-85.

<sup>221</sup> *British Journal of Photography*, no. 506, vol. 17, 14 January 1870, p. 14. Paul Wing, *Stereoscopes. The first one hundred years*, Nashua: Transition Publishing 1996, pp. 131-132.



James Forrest's patent plate substitute glass was a cheaper alternative to the Chance Brothers' glass for photographic plates and was popular between 1872 and 1887.<sup>222</sup> It was also imitated but Forrest, rather than issuing threats or starting legal action, encouraged purchasers to check for the trade mark:

Caution. We are extremely annoyed to find that spurious imitations of our Patent Plate Substitute Glass are being sold to the Public under our name. Please observe that none are genuine unless the packets are labelled with our Trade Mark [F]. J. A. Forrest & Co., Glass Manufacturers, 58 Lime Street, Liverpool.  
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The role of the trade mark is discussed later and in Chapter 6.

#### *The patent as a marketing tool*

It was increasingly the case throughout the period 1840 to the 1890s that having a patent associated with a particular piece of equipment or process conferred a status to that product beyond simple protection from imitators. Manufacturers' advertising frequently emphasised the presence of a patent by noting 'protected by patent' or 'patented' and including the royal arms. This was more than simply a warning to potential infringers. The patent was a positive endorsement of the novelty, efficacy or quality of the product, and in many cases it was simply a marketing tactic aiming to raise a product above that of competitors.<sup>224</sup>

Retailers and agents for patentees also promoted the presence of a patent to their clientele. Much of Richard Beard's advertising for the daguerreotype noted its patented status. Richard Kennett in 1874 stated that he will: 'on and after the 2<sup>nd</sup> of March, issue

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<sup>222</sup> 'News and Notes', *British Journal of Photography*, no. 1842, vol. 42, 23 August 1895, p. 540. Forrest's plate glass substitute sold for an average of 1s per superficial foot against 2s 9d for Chance Brothers & Co.'s patent plate glass. Forrest erected a factory to supply his substitute and it remained popular until cheaper glass imported from Belgium superseded it.

<sup>223</sup> Advertisement, *British Journal of Photography*, no. 548, vol. 17, 4 November 1870, p. iv.

<sup>224</sup> This is an aspect of the patent that has been little discussed by historians.

his patent Sensitised Gelatine Pellicle'.<sup>225</sup> In both cases advertising the presence of a patent on a new type of product supported its novelty as well as deterring imitators. The makers of cameras and photographic apparatus, especially in the period before the 1880s, also included the patented status in their advertisements. Companies such as the Patent Dry Collodion Plate Company of Birmingham and Patent Films Syndicate Limited included the existence of a patent in their business name.<sup>226</sup>

How much the presence of a patent was noted by a purchaser or added to the sale of a product is impossible to quantify. What it did was to add to a sense of originality and gravitas about a particular product. Increasingly by the turn of the century, the trade mark and trade name had overtaken this incidental function of the patent. More formal marketing and advertising to endorse a brand rather than particular products became the norm.

#### *Trade Marks*

Throughout the nineteenth century trade marks - both informal and those formally protected through the trade mark register - were used as a sign of quality.<sup>227</sup> The cost of defending a patent could be prohibitive for patentees who, in many cases, saw little financial return from their invention and a trade mark could perform a similar function to patents. As early as 1864 Spencer was highlighting the trade mark on his paper:

Mr Spencer has learnt with regret that Albumenized Paper has for some time past been sold as his which has not been manufactured by him. To put a stop to this practice, and as a protection to himself and a guarantee to purchasers of this

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<sup>225</sup> Advertisement, *British Journal of Photography*, no. 719, vol. 21, 13 February 1874, p. iv.

<sup>226</sup> The Patent Dry Collodion Plate Company was formed by Dr Richard Hill Norris to exploit his patent number 2029 of 1 September 1856 for an improved dry collodion. The Hill Norris collodion remained popular until the 1870s. The Patent Films Syndicate Ltd was registered in 1892 (The National Archives, BT 31/5428/37468).

<sup>227</sup> See: The Patent Office, *A Century of Trade Marks*, London: HMSO, 1976; David C. Newton, *Trade Marks. An introductory guide and bibliography*, London: The British Library, 1991, pp. 13-15, 17.

well-known article, every sheet will in future be impressed with his name ... and each *Ream* will bear a distinctive Label and Trade Mark.<sup>228</sup>

In 1868 Lampray & Company claimed that every sheet of its sensitised paper: 'is stamped Lampray & Co., London and any infringement or colourable imitation of this Trade Mark will be proceeded against'<sup>229</sup>

The Merchandise Marks Acts of 1862 and 1887 gave manufacturers increased protection and the Trade Marks Registration Act of 1875 recognised the trade mark as intellectual property giving registrants the right to sue for infringement.<sup>230</sup> The strengthening of the law and increasing commercial pressure between photographic manufacturers from the 1880s led to a rash of court cases over trade mark infringement. In 1886, for example, The Derby Photographic Dry Plate Company took issue with Barker, Pollard, Graham & Company over their use of the word 'Derwent' to describe their products. The Derby company claimed this usage was too close to their 'Derby' trade mark which had been registered in December 1885.<sup>231</sup>

The most important case during the period was over the use of 'Britannia Dry Plates' between the plate manufacturer Alfred Harman and Marion & Company, the company which retailed the plates. A dispute between the two parties had grown increasingly acrimonious particularly over their quality that Marion claimed had declined. Harman stopped making the plates for Marion and started retailing them on his own. He also applied for an injunction to stop Marion from selling the plate, which they had started manufacturing themselves, using the same name. The case was the subject of a decision in the High Court of Chancery in February 1886 which found in favour of Marion and

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<sup>228</sup> Advertisement, *British Journal of Photography*, no. 239, vol. 11, 2 December 1864, p. i.

<sup>229</sup> Advertisement, *British Journal of Photography*, no. 420, vol. 15, 22 May 1868, p. vii.

<sup>230</sup> *Trade Marks Journal. List of Applications for the Registration of Trade Marks*, London: HMSO. The *Trade Marks Journal* was the official register of trade marks and their owners and was established after the passing of the 1875 Trade Marks Registration Act and modified under the Patents, Designs and Trade Marks Acts of 1883 and 1888. A recent survey of the *TMJ* from its first publication in 1876 (no. 1, vol. 1, 3 May) to 1900 (no. 1187, vol. 25, 26 December) shows a relatively small number but increasing number of photographic companies making use of trade marks throughout the period.

<sup>231</sup> 'Photography in Court', *British Journal of Photography*, no. 1344, vol. 33, 5 February 1886, p. 92.

Company as it was the official trade mark owner and Harman was only the manufacturer.<sup>232</sup> Following judgment both parties advertised in the same issue of the *British Journal of Photography*. Marion highlighted its success emphasising it had the right to use the name. Harman gave notice that ‘in future, these well-known Plates will bear the title of “The Ilford Dry Plates”’.<sup>233</sup> They showed the commercial importance a trade mark was seen to have in a market that was growing rapidly, and the lengths that parties in a dispute would go to in endeavouring to retain the rights to a successful mark.

#### *The impact of a patent*

There were a small number of photographic patents that had wider consequences for both the manufacturing and retailing of photography. The patents for the daguerreotype and calotype, as noted earlier, undoubtedly affected their commercial exploitation by limiting their use to those with the ability to pay for a licence. The daguerreotype process, for example, was mainly confined to a small number of professional photographers, which had the effect of reducing the market for manufacturers of equipment and materials. The absence of a patent on the wet-collodion process and failure of Talbot’s court case to prove that his calotype patent applied to the new process led to a significant rise in the number of professional photographers after 1854 and, of course, a rise in the number of amateur photographers. Thereafter, most patents had a relatively small impact on amateur photographers with most being applied to very narrow aspects of photographic equipment and chemicals. The limited commercialisation of photographic patents suggests that the majority were being produced speculatively or, despite the cost, with the intention of using the patented status as a means of marketing.

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<sup>232</sup> *British Journal of Photography*, no. 1347, vol. 33, 26 February 1886, p. 129.

<sup>233</sup> *British Journal of Photography*, no 1347, vol. 33, 26 February 1886, p. iii, xv.

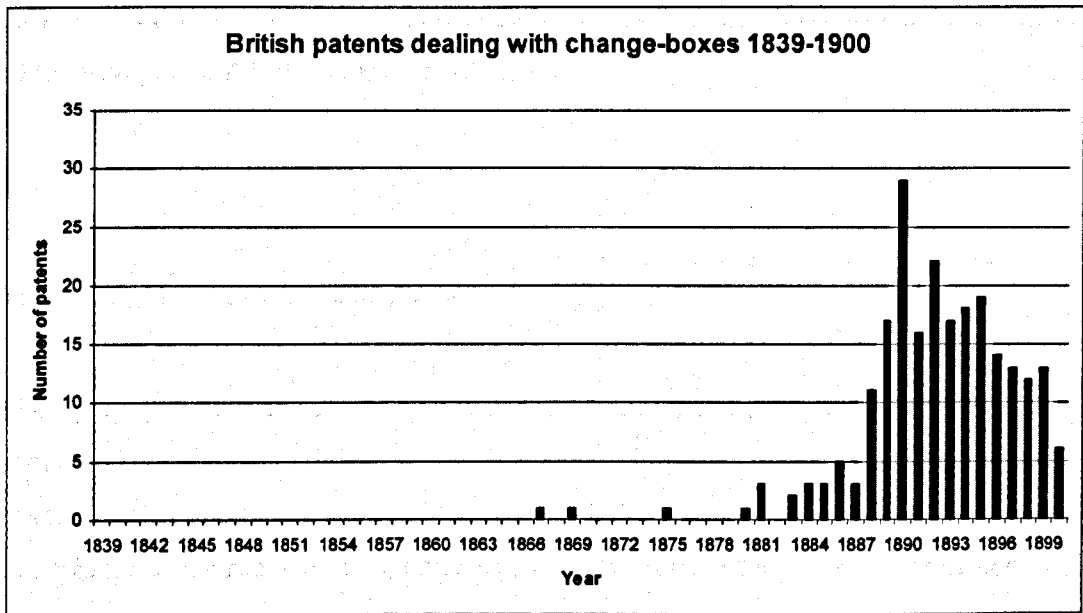


Figure 8. British patents dealing with change-boxes 1839-1900.

The activity around particular types of patents provides a useful window on to which areas of photography were considered of interest during particular periods. The rise in patents dealing with change-boxes can be used as a proxy for hand cameras, for example, see Figure 8, and is particularly revealing. The significant rise in the number of patents in this area from the mid-1880s clearly confirms the growing interest in hand cameras evidenced elsewhere.

With the introduction of the Kodak camera in 1888 there was a significant rise in patents relating to them as other manufacturers sought to enter a newly created market. A similar pattern for patents dealing with roll film and roll holders and the photographic

dark room occurred, which both saw large increases from the 1880s beyond the impact of the new patent Act introduced in 1883.<sup>234</sup>

### **The changing economic condition**

Photography did not exist in its own world of technological change. There were wider social and economic conditions within Britain that impacted on photographic manufacturing and the consumer. The ongoing industrial revolution and the expansion of an Empire ensured that the country's prosperity increased significantly between 1839 and 1914. Britain continued to be the leading economic and manufacturing power in the world although from the second half of the century the United States and Germany were experiencing faster rates of growth. Britain's growth was not a steady trajectory, there were periods of depression during the 1840s, 1870s and early 1900s linked to poor agricultural harvests that had a knock on effect on manufacturing output. Overall, though, there were increasing amounts of capital for investment and a consumer base with growing disposable income. The demand for photographic equipment and sensitised goods reflected this and grew, especially between the late 1870s and 1890s. This influenced the companies that were involved in photographic manufacturing which they needed to expand if they were to meet increased demand. Expansion was supported by changes in company structure which provided capital for large-scale mechanisation and the building of manufacturing plants.

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<sup>234</sup> A comparison between the rate of patent activity generally against photographic patent activity shows a steep rate of increase for photography suggesting that other factors than a new Act were at play. I would argue that increased demand from amateur photography and manufacturers and inventors responding to this resulted in the volumes of photographic patents by generated. The argument is further supported by the fact that certain areas within photography, for example, processes, colouring photographs or exposure measurement which had applicability more for professional photography saw patent activity remaining consistent or showing no change during the 1880s.

*Changes in corporate structure: the limited company*

The development of company law throughout the nineteenth century had an impact on the nature of the photographic company. The Joint Stock Companies Act of 1844 had permitted the formation of companies without limited liability and the Limited Liability Act of 1855 allowed for the limited liability of shareholders.<sup>235</sup> This ensured that should a company fail then the shareholders would only have a small individual responsibility for any outstanding debts. A consolidating act - the Joint Stock Companies Act of 1856 - provided a simple administrative procedure by which any group of seven people could register a limited liability company for themselves.<sup>236</sup> For photographic firms this helped them raise capital in order to mechanise or to broaden their capital base, as the founders of companies attempted to realise some of the value of their business.<sup>237</sup>

As Chapter 3 noted the first businesses manufacturing photographic goods were either individuals or partnerships operating on their own account. This was the 'personal' of Chandler and Daems's model of business growth (see page 234). These firms were generally small and employed the owner, and were sometimes supported by a small number of workman and apprentices. Corporately these firms required little capital. By the 1880s there was an increasing requirement for capital to finance expansion and the establishment of new photographic companies. The demand for capital of most photographic businesses was not as intense as those of other industries and many firms chose to remain as a small business. As a result the basic corporate structure of the industry remained as a sole proprietor or partnership into the early twentieth century. For a smaller number of companies looking to grow significantly or to take up mass-production then there was usually a requirement for external finance. The limited liability company was one vehicle for financing that expansion.

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<sup>235</sup> Joint Stock Companies Act 1844 (7 & 8 Vict. c.110) and Limited Liability Act 1855 (18 & 19 Vict. c.133).

<sup>236</sup> Joint Stock Companies Act 1856 (19 & 20 Vict. c.47). This was the foundation of modern British company law.

<sup>237</sup> See: John F. Wilson, *British business history, 1720-1994*, Manchester: Manchester University Press, 1994, pp. 119-120.

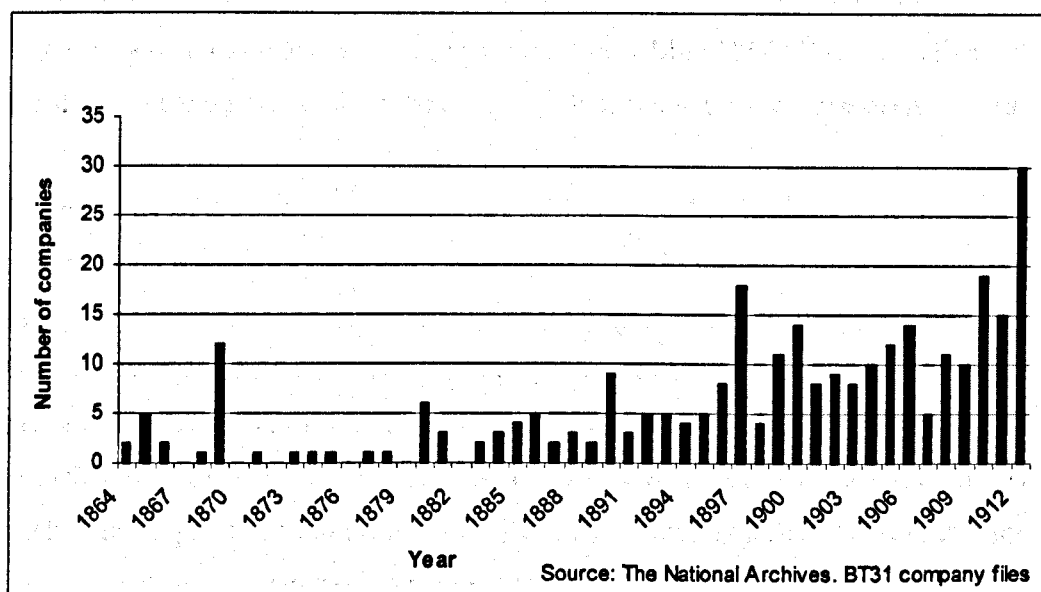


Figure 9. Photographic limited liability companies 1864-1914.

Joint-stock, or limited companies, within photography began to appear from 1864. Initially only a very small number of these related to the manufacturing side of photography and retailers and sensitised goods manufacturers only began adopting it in greater numbers from the 1880s (see Figure 9).<sup>238</sup>

Some early company offerings were speculative. The Liverpool Manufacturing and Wholesale Photographic Company Limited was promoted in 1866 as an attempt by W. H. Mardock, a manufacturer of photographic chemicals and albumenized paper, to 'carry on the business on an extensive scale' and for Mardock to realise some of the value of the business.<sup>239</sup> The company had a capital of £3000 of which Mardock took £1500 in ordinary shares and £500 of preference shares were placed. With the genuine nature of the business being emphasised the remaining £1000 worth of preference

<sup>238</sup> The first photographic joint stock companies were for photographic studios although these also usually defined dealing in photographic goods as part of their business. The first date from 1864 companies and were the Masonic & General Photographic Company and United Association of Photography.

<sup>239</sup> Advertisement, *British Journal of Photography*, no. 303, vol. 13, 23 February 1866, p. viii.



shares was advertised. The company subsequently announced that the share list of the company would close and business commence on 1 May 1866.<sup>240</sup> It seems likely that the shares were not taken up as the company does not appear to have been formed.

The majority of the photographic manufacturing limited companies were set up to take over existing businesses. One early example was the English Mount Manufacturing Company Limited, which had extensive photographic interests. It was established in 1879 to take over the business of W. T. Hughes and Company, which had been in existence for over eight years. The company's capital was £10,000 of which £6000, half in cash and half in shares, was allocated to Hughes. Share capital was required 'to allow further development and to meet demand'.<sup>241</sup> The company's first statutory meeting declared a strong dividend of 15 per cent and noted that a new factory would further benefit business.<sup>242</sup>

The relationship between limited liability and capital is exemplified by Warnerke and Company Limited, which issued a prospectus in 1884. The company was formed 'for the manufacture of photographic sensitive plates, tissue and paper, for negatives and positives, and for various other applications covered by L. Warnerke's patents'.<sup>243</sup> It was capitalised at £4000 which was required to establish such a factory.

Other than a requirement for capital the death of a founder was frequently a precursor to conversion to limited liability status. This permitted a business to survive as an entity beyond any one individual. The London Stereoscopic and Photographic Company Limited, which operated as a manufacturer, photographic studio and photographic retailer, was formed in 1885 after the death of George S. Nottage who had founded the

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<sup>240</sup> Advertisements, *British Journal of Photography*, no. 310, vol. 13, 13 April 1866, p. viii; no. 312, vol. 12, 27 April 1866, p. viii.

<sup>241</sup> 'Prospectus', *British Journal of Photography*, no. 1008, vol. 26, 29 August 1879.

<sup>242</sup> *British Journal of Photography*, no. 1025, vol. 26, 26 December 1879, p. 620.

<sup>243</sup> The National Archives, Kew, BT 31/3285/19373, Warnerke & Co. Ltd.; *Photographic News*, no. 1364, vol. 28, 24 October 1884, supplement.

company in 1854. Shares were offered to the public via a formal prospectus, which noted the capital of the company at £90,000. The vendors of the old company agreed to take £30,000 of the capital in shares. Of the 12,000 shares available 1000 were reserved for preferential allotment to amateur photographers or customers of the firm with the company forecasting a dividend of 7 per cent or more.<sup>244</sup> The shares were subscribed and the conversion allowed Nottage's family and business partner H. J. Kennard to realise some of the value of the business in cash and shares, and it ensured that the business was able to continue.

The camera maker Thornton-Pickard was also careful in ensuring that its customers benefited from its conversion to a public company in 1897. In the allocation of shares 'preference was given to customers, and although the capital was considerably over-subscribed, the Company endeavoured to give photographers as full an allotment as possible'.<sup>245</sup>

Not all public share offerings were so successful. One of the earliest photographic limited companies was the United Association of Photography. It had been set up to carry on business as a photographic dealer and studio and converted to limited liability in 1864. Lt. Col. Stuart Wortley was its principal shareholder and other shareholders included the camera maker Patrick Meagher, photographic chemists, and a photographic retailer as well as Viscount Hawarden and the Earl of Lichfield. The business failed and was put into voluntary liquidation in 1867.<sup>246</sup> Writing in the context of the photographer Vernon Heath's proposal to set up Vernon Heath and Company Limited the *British Journal of Photography* was scathing in its view of limited liability and photography:

Undeterred by the fate of Overend, Guerney and Co., and the scores – nay hundreds – of less notorious cases of break-down in connection with the principle of limited liability, there are still persons possessed of sufficient

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<sup>244</sup> The National Archives, Kew, BT 31/3508/21353, London Stereoscopic & Photographic Co. Ltd.

<sup>245</sup> 'Thornton Pickard Mfg. Co. allotment of shares', *British Journal of Photography*, no. 1921, vol. 44, 26 February 1897, p. 129.

<sup>246</sup> The National Archives, Kew, BT31 997/1537C. The United Association of Photography, Ltd.

temerity to launch fresh speculations, despite the experience of the last two years, and the shoals and quicksands so evident to view, on the troubled waters of "limited" finance. After the fate of the United Association of Photography – now in the course of winding up – it was thought we should hear no more of the application of the principle alluded to in connection with photographic enterprise; but the public and ourselves have been mistaken – the work of "conversion" of private concerns into public companies has not yet been completed.<sup>247</sup>

The proposed merger of three major photographic firms in 1885 failed to attract sufficient subscribers to its shares. The plate manufacturer Wratten and Wainwright, the retailer Jonathan Fallowfield and the sensitised goods manufacturer and printer Morgan and Kidd issued a prospectus for a new company Wratten, Fallowfield, Morgan & Kidd Company Limited. The company was formed to:

carry on business as wholesale and manufacturing chemists and druggists, and to manufacture, buy, sell and deal in all chemicals, paper, glass, apparatus, materials, and all things required for photographic or photo-engraving purposes, and to carry on business as trade photographers and photo-engravers, and as photographic printers and publishers<sup>248</sup>

The business was to be capitalised at £70,000 and valued the individual businesses at £13,200, £18,000 and £20,000 respectively. It is not clear why the individual businesses felt a need to combine as each was successful in their own fields and would continue to be so for many years after 1885. The public were clearly not convinced and the firm's solicitors wrote the following year to the Registrar of Joint Stock Companies that 'the offers of subscription to this company having been wholly insufficient for the purpose of the company all the contracts mentioned in or scheduled to the Articles of Association have been rescinded and the company has never commenced and now could not commence business'.<sup>249</sup> Ten years later the *British Journal of Photography* in an

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<sup>247</sup> 'Photographic and "unlimited" liability', *British Journal of Photography*, no. 395, vol. 14, 29 November 1867, p. 573. The bank Overend, Gurney and Co. had collapsed in 1866 and went into liquidation owing around £11 million causing a major financial crisis. Vernon Heath and Co. Ltd., was established in 1867, see BT 31/1372/3784.

<sup>248</sup> The National Archives, Kew, BT 31/3554/21724. Wratten, Fallowfield, Morgan and Kidd Co., Ltd.

<sup>249</sup> The National Archives, Kew, BT 31/3554/21724; letter dated 1 March 1886 from Crouch, Spencer & Edwards, solicitors, to the Registrar of Joint Stock Companies.

answer to a correspondent summed up the general position of the photographic limited company:

Investors have found the majority of photographic "limited companies" by no means satisfactory investments, and, in future, will doubtless be a little chary as to what they put their money in.<sup>250</sup>

Even an apparently strong company such as the London Stereoscopic and Photographic Company Limited failed to live up to its prospectus and dividends were generally disappointing - as low as 4 per cent in 1898, against a projected 7 per cent or more at formation.

For companies that were trading successfully limited liability status offered a way of raising finance beyond the firm's original capitalisation. The Eastman Photographic Materials Company Limited, which had been formed in 1889 with a capitalisation of £150,000 had expanded quickly during its first years. By 1891 it sought an increase in capital to £200,000 which it 'needed for trading purposes' and to support the building of a new factory at Harrow which opened the same year.<sup>251</sup> This did not prove to be an obstacle for the company and the increased shares were quickly subscribed to.

For most photographic firms private companies where shares were not made available to the public were the norm. This arrangement offered the business the principal advantage of limited liability in terms of minimising individual financial risk. It also meant that shareholders, who would benefit from dividends, could be kept to family members or to particular individuals bringing with them capital or business skills.

Newman and Guardia became a limited company in 1896 and noted:

we have turned our business into a limited liability company. This, however, has been a purely private arrangement, and no shares have been offered to the public. The business will continue under our sole management, and every

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<sup>250</sup> 'Answers to correspondents', *British Journal of Photography*, no. 1827, vol. 42, 10 May 1895, p. 304.

<sup>251</sup> 'Eastman Photographic Materials Company', *British Journal of Photography*, no. 1622, vol. 38, 5 June 1891, pp. 363-364.

instrument bearing our name will, as before, be made and tested under our constant personal supervision.<sup>252</sup>

There was a flurry of activity around limited liability companies in the mid to late 1890s which caused the *British Journal of Photography* to comment: 'photography is just now offering a somewhat fertile field for the cultivation of limited liability companies, and beside those already recently formed, others may be shortly expected'.<sup>253</sup> The following month Cadett and Neall, the plate manufacturer, became a private limited company and the photographic lens maker and optician Ross issued a prospectus for its conversion in July.

Limited company status could also be used as an opportunity to revise the structure of the company. The Britannia Works Company, which had converted to a private limited company in 1891 with a capital of £120,000, undertook a corporate reorganisation and issued a prospectus in May 1898 for a proposed Britannia Works Company (1898) Limited. This was to be a public company. The capital of the company was set at £380,000 that was divided into 190,000 6 per cent cumulative preference shares of £1 each and 190,000 ordinary shares of £1 each. Sixty thousand of each was reserved for shareholders of the old company. The public offering was over-subscribed and the company gave preference to the photographic trade and users of the company's goods in allocating shares. It had operated an employee share scheme since 1891 and this was continued under the new structure. The reorganisation gave the company significantly increased capital but it also gave the founder of the business, Alfred Harman, £200,000 in cash and 90,000 shares in the new company.<sup>254</sup> He retired although remained active on the board and as a consultant. What was not foreseen was that, as the business suffered a decline in the early twentieth century, being a publicly quoted company made it vulnerable to a potential takeover (see Chapter 5).

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<sup>252</sup> 'Ex cathedra', *British Journal of Photography*, no. 1890, vol. 43, 24 July 1896, p. 466.

<sup>253</sup> 'Ex cathedra', *British Journal of Photography*, no. 1934, vol. 44, 28 May 1897, p. 377.

<sup>254</sup> 'The Britannia Works Company', *British Journal of Photography*, no. 1993, vol. 45, 15 July 1898, pp. 460-461; R. J. Hercock and G. A. Jones, *Silver by the ton. A history of Ilford Limited 1879-1979*, Maidenhead: McGraw-Hill Book Company, 1979, p. 41.

## Chapter 5. Consolidation of an industry

**'simplification, to give the photographer apparatus and materials with which it is almost impossible to go wrong' (1911)<sup>255</sup>**

### The arrival of Kodak in Britain

The most important photographic company operating in Britain from the mid-1880s was Kodak. Initially this was directly through the American company and then from 1889 a British subsidiary company, the Eastman Photographic Materials Company Limited, was established (see Table 10).<sup>256</sup> Kodak was important as both a manufacturer and retailer. Within the wider British photographic industry its role as a conduit for the transfer of American business ideas and retailing techniques cannot be overstated.

George Eastman, the company founder, first began trading in Britain through his American company, the Eastman Dry Plate and Film Company, which operated from offices at 13 Soho Square, London. This was a wholesale outlet for Eastman's goods as well as for those from other American photographic manufacturers. In 1888 the company's policy of selling wholesale was changed to include retail and a lease for larger exclusive premises at 115 Oxford Street, London, was signed in March 1888 (see Illustrations 30 and 31). In April this became the firm's headquarters and retail outlet.

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<sup>255</sup> Taken from an address by J. B. B. Wellington in 1911 reported in *British Journal of Photography*, no. 2671, vol. 58, 14 July 1911, pp. 527-530.

<sup>256</sup> There has been no published history of Kodak in Britain. Several unpublished histories of the British company by former employees have been written which have been inspected including: Margaret D. Gauntlett, *A history of Kodak Limited*, Kodak Ltd: Harrow, 1978. This was a history of Kodak Ltd compiled for internal circulation; F.W. T. Krohn, *Early Kodak Days (1891-1901)*, Unpublished manuscript, September 1932; E. E. Blake, *Reminiscences of Kodak Ltd.*, unpublished manuscript, 1959.

Company name	Trading country	Period
Eastman Dry Plate Company	USA	1880-1884
Eastman Dry Plate and Film Company	USA	1884-1889
Eastman Company	USA	1889-1892
Eastman Kodak Company	USA	1892-present
Eastman Dry Plate and Film Company	UK	1885-1889
Eastman Photographic Materials Company Limited	UK	1889-1899
Eastman Kodak Company Limited	UK	1897-1898
Kodak Limited	UK	1898-present

**Table 10. Kodak in Britain and the United States showing name variants and dates.**

*Source: TNA, BT31 company files; Brayer (1996), George Eastman.*

William H. Walker, a close associate of Eastman, managed its London activities. By 1889 with an increasing volume of business it became apparent that a formal British subsidiary company was required to handle the company's non-American business and the Eastman Photographic Materials Company Limited was registered on 28 November 1889:

To purchase or otherwise acquire from the Eastman Dry Plate and Film Co. of Rochester, New York, U.S.A., all the business and goodwill thereof as manufacturers of and dealers in photographic materials and the trades connected therewith in all parts of the world, except the continent of North and South America, and to purchase or otherwise acquire from the said Company, all their Patents and Patent Rights in all parts of the world, except as foresaid<sup>257</sup>

The company's capital was set at £150,000 of which £125,000 was paid to the American Eastman Company in cash and shares. The first directors included William H. Walker and Henry A. Strong from the American business, as well as British photographic notables Andrew Pringle and George Davison. Walker became the first managing director. The contractual arrangement for the supply of goods was also specified:

<sup>257</sup> The National Archives, Kew, BT31 4614/30276, The Eastman Photographic Materials Co. Ltd.

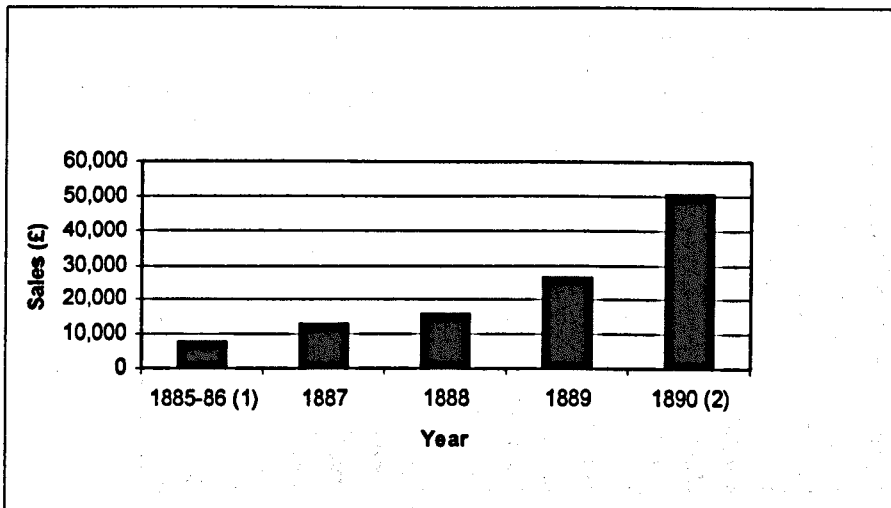


Figure 10. Eastman Company sales in Britain 1885-1890. Notes: 1. fifteen months / 2. thirteen months to December 1890. Source: Kodak company documents.

The vendor company [the American parent company] will furnish the purchaser company [the British company] with such goods as the purchaser company may require pending the building and complete fitting of a factory in England up to one third of the total output of the vendor company's factories at an advance of sixteen and two thirds per cent over the actual cost of production at factory free on board at Rochester. Cash on delivery in London. The purchaser company to pay freights and insurances and differences in rates of exchange

The share capital was increased by £50,000 in May 1891. This was required for trading purposes following the completion of the firm's factory on a seven acre site at Harrow, in north west London (see Illustration 32). The London company had responsibility for extending the business in the non-American countries a task which had originally been undertaken through sole agents. From 1891 branch companies, wholly owned and managed by the British company, superseded the agents in each country.<sup>258</sup>

On Walker's retirement in 1893 he was replaced as managing director by George Dickman, another close associate of Eastman. With Dickman's death in 1898 George Davison, a well-known photographer and Kodak board member, was appointed

<sup>258</sup> A short summary of the company's early history is given in 'A Kodak gathering and presentation', *British Journal of Photography* no. 1705 vol. 40, 6 January 1893, pp. 11-12.



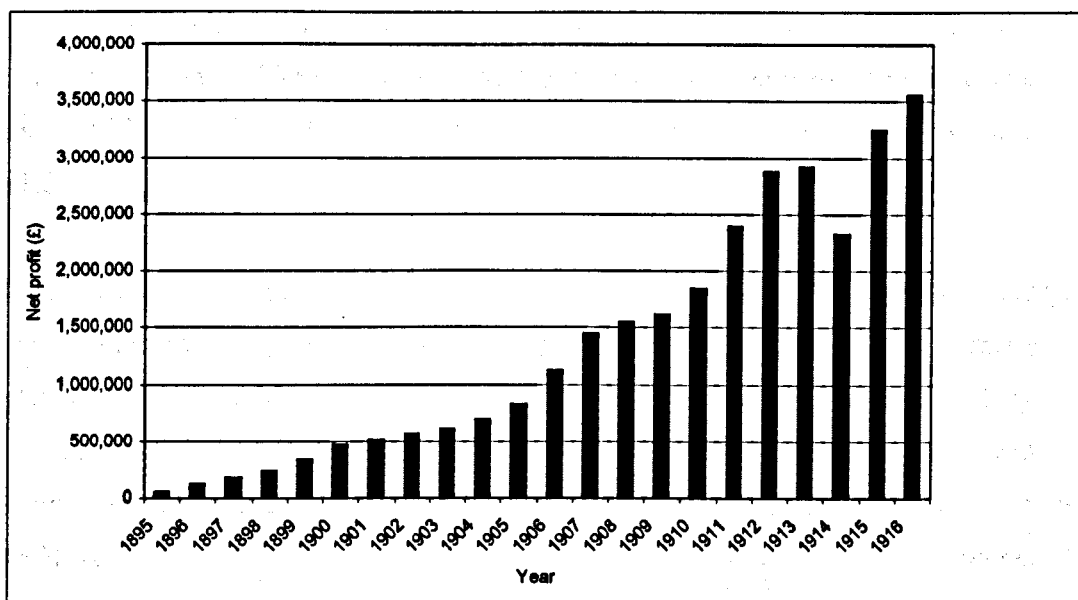


Figure 11. Kodak Britain and USA combined net profits 1895-1916. Source: *British Journal of Photography*, 1917.

managing director. His antagonistic policy towards competitors generated a negative attitude towards Kodak from amateurs and the trade, which is discussed in Chapter 6. Davison's anarchist activities provided an opportunity for Eastman and he was asked to resign being replaced by William S. Gifford who adopted a more conciliatory policy towards the wider photographic trade. Gifford remained in that post until he returned to the United States in 1919.

Financially, Kodak's business was very successful. Although only partial sales data is available for the company's early period, it is clear that there was a dramatic growth in the value of its sales, which was translated into profits, as Figure 10 shows. Although the profits associated with the American company were published in combination with those of the British company it was clear that the business was growing significantly. Profit figures exist for 1898 at £80,263 and for 1899 at £120,454.<sup>259</sup> Growth continued until just before the First World War (see Figure 11). Britain's contribution to this

<sup>259</sup> D137. Lawrence P. Bachmann Papers, University of Rochester. These combine Kodak Limited's profit and dividends from the French and German companies. In 1901 Kodak Limited voted to transfer ownership to the Eastman Kodak Company of New Jersey and profit figures have only been located in a consolidated form.

growth was significant. In the year ending June 1911 sales by Kodak Ltd of products manufactured in the United States by the Eastman Kodak Company and its branches totalled \$5.33 million and for goods manufactured or prepared by Kodak Ltd it was \$1.25 million.<sup>260</sup>

Corporately, the Eastman Photographic Materials Company Limited underwent a major change in its relationship with the American side of the business in 1898. Eastman planned to combine both the American and British companies into a single publicly-listed company domiciled in Britain. Agreement from the existing shareholders was secured and a new company, the Eastman Kodak Company Limited, was registered on 15 November 1898. It owned the British, French and German businesses and 98 per cent of the American business and was capitalised at £1.6 million, with the majority of the shares being taken up by the original shareholders of the predecessor companies. The remaining shares which were publicly offered were over-subscribed by 25 per cent.

In 1900 the British government introduced a five per cent tax on company profits to help pay for the Boer war. In Kodak's case the tax was applied to the combined profits of the British and American sides of the business which Kodak challenged in court. Before the outcome of the case was known Eastman reversed the scheme to avoid the tax. He moved the headquarters of the Eastman Kodak Company to New Jersey which was favourably disposed to large corporations, and Kodak Limited and the branch businesses became subsidiaries of the American business. Kodak's appeal against their income tax assessment was eventually successful at the court of appeal and it was refunded £38,000 in tax already paid.<sup>261</sup>

Under the revised corporate structure Kodak Limited, while enjoying a considerable amount of autonomy, remained subservient to the American business. Arrangements

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<sup>260</sup> D137. Lawrence P. Bachmann Papers, University of Rochester. At this time Kodak Ltd was only manufacturing photographic dry plates, photographic papers and sourcing chemicals.

<sup>261</sup> 'Kodak (Limited) v. Clark (Surveyor of Taxes)', *British Journal of Photography* no. 2200, vol 49, 4 July 1902, pp. 533-534.

were made to transfer the ownership of the European companies from Kodak Ltd to Eastman Kodak, although Kodak Ltd would continue with the management of the companies and act as intermediary between the parent company. The supply of goods from Eastman Kodak Company to Kodak Ltd for sale in Britain was formalised. The American firm charged cost price plus 15 per cent on cameras and apparatus and in the case of roll film a discount of 45 per cent from the list price was allowed. Goods supplied by Kodak Ltd directly to the European companies were invoiced directly and Kodak Ltd made a charge of 1 per cent of the invoice total to Eastman Kodak for services rendered in the supply of the goods. This minimised the British company's liability to taxation on its profits.<sup>262</sup>

#### *Monopoly, merger and Ilford Ltd*

The growth of the Kodak's British operations was rapid and the firm had progressed from simply retailing by establishing a manufacturing base at Harrow in 1891. Eastman was anxious to grow the business further and more rapidly than relying simply on organic growth. Combining with an existing business was the only way to achieve this and in 1897 he approached the Britannia Works Company to propose an amalgamation of the two firms. Alfred Harman, the founder of the Britannia Works Company, and the board rejected this overture. Rumours that the Imperial Dry Plate Company was to be 'Americanised' in 1902 were dispelled by the company.<sup>263</sup>

Eastman again approached the board of Ilford Limited, as the Britannia company had been renamed, on 21 December 1902 with a new offer of amalgamation. This time, in a more challenging wider economic condition, the board was split and when the news became more widely known it caused an uproar. A circular was issued to all

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<sup>262</sup> *Memorandum concerning the relationship between the Eastman Kodak Company of New Jersey and Kodak Limited, with particulars of trade arrangements*, n.d., Kodak Historical Collection, University of Rochester. This describes the arrangements in place from 1902 up to at least 1914.

<sup>263</sup> 'The Imperial Dry Plate Company, Limited', *British Journal of Photography* no. 2209, vol. 49, 5 September 1902, p. 719. The company was quick to refute reports that it received from amateurs and professionals and noted 'that there had not been any negotiations, as far as concerns this company, which remains under the same control as hitherto'.

shareholders by Alfred Harman and sixteen other Ilford Limited directors in which they stated that 'that such an amalgamation should be carried into effect'. Their statement noted that the Eastman Kodak Company had amalgamated with two of the largest dry plate factories in the United States and was planning to enter the British market in a serious way, which posed a threat to Ilford's business. Competition was seen as detrimental to both businesses and the pro-Kodak directors felt that Ilford's business would be enhanced by being able to take advantage of Kodak's distribution facilities. Kodak's lack of indebtedness and under-employed capital made amalgamation a sensible course of action.<sup>264</sup> The circular had been issued without the agreement of the full board and the following week a letter was issued to shareholders by G. F. Blake and C. J. Cox, the chairman and vice-chairman of the Ilford board respectively. This set out an opposing view and questioned the financial benefits of such a merger. They claimed that Ilford 'is one of the safest and best paying industrial undertakings in this country'.<sup>265</sup>

The matter continued to be argued over in public without resolution. In June a subcommittee of five shareholders was appointed to examine the matter in detail and to make a recommendation to the board. It reported in August that 'the offer recently submitted to the shareholders was totally inadequate, and that no offer should have been entertained by our board that did not embrace an alternative of a cash payment (on a fair basis) instead of shares'. The subcommittee recommended that the business of Ilford Limited be continued under strong and energetic management and it went further and proposed substantial changes to the board and a reduction of directors' remuneration, which it considered excessive.<sup>266</sup> These were voted upon and passed at an extraordinary general meeting of Ilford Limited on 29 September 1903.

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<sup>264</sup> 'Proposed amalgamation of Ilford, Ltd., and Kodak, Ltd.', *British Journal of Photography* no. 2247, vol. 50, 29 May 1903, pp. 431-432.

<sup>265</sup> 'The proposed amalgamation of Ilford, Limited, and Kodak, Limited', *British Journal of Photography* no. 2246, vol. 50, 22 May 1903, p. 412.

<sup>266</sup> 'The proposed Ilford-Kodak amalgamation', *British Journal of Photography*, no. 2259, vol. 50, 21 August 1903, pp. 671-672.

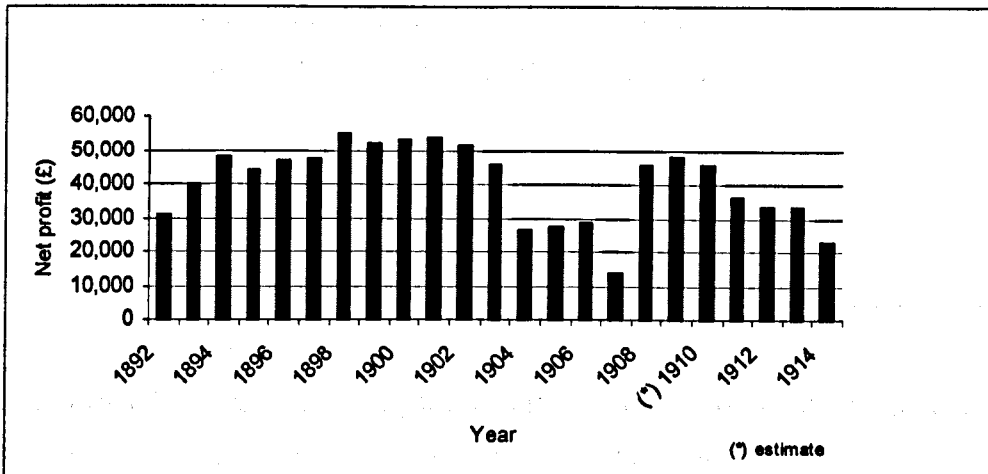


Figure 12. Britannia Works Company / Ilford, Ltd, net profits 1892-1914.  
 Sources: *The Photogram*, *British Journal of Photography*, *Ilford archives*

The matter caused considerable harm to Ilford Limited by diverting the board's time away from business matters. The most important of these was the increasing competition between sensitised goods manufacturers, not just from Kodak but from other British manufacturers, and a worsening economic situation. Ilford's performance and net profitability declined dramatically between 1903 and 1908 (see Figure 12).

Kodak continued to prosper without the Ilford business. Its adoption of a policy of stifling competition and restricting the way competitors' goods were retailed supported its own business and weakened competitors, which is discussed in Chapter 6. In 1904 Kodak finally achieved its aim of expanding manufacturing production by taking over a smaller sensitised goods manufacturer, Cadett and Neall Ltd. The firm had a technically advanced and very successful factory mass-producing plates and sensitised goods and it complemented Kodak's own business. Mindful of the adverse publicity that the proposed Ilford takeover had generated within the photographic and wider business press, this time the takeover was done in a low-key way. More importantly, it was done with the support of James Cadett and Walter Neall the founders and principal

shareholders of Cadett and Neall Ltd which was a private company.<sup>267</sup> Production was transferred from its Ashford factory to Kodak's Harrow plant in 1908.

### **Industrial consolidation**

Kodak's attempt to support the expansion of its own business by taking over other firms was not unique. It was significant because of the size of the firms it targeted but elsewhere other firms were also consolidating through takeover or amalgamation. In sensitised goods manufacture the rapid growth of the 1880s-1890s period had reached a plateau and consolidation was necessary to support the industry. There was less consolidation amongst equipment manufacturers.

#### *Sensitised goods*

From the 1890s, particularly amongst the dry plate and film manufacturers, the acquisition of other companies to gain manufacturing capacity and technical knowledge as well as market share took hold. There had always been mergers between small photographic manufacturers but takeovers to deliberately support business growth were more unusual. For companies concerned with sensitised goods, there was significant competition from the 1890s, and combining allowed companies to grow more quickly to meet consumer demand than if they relied simply on sales growth alone.

The Britannia Works Company, renamed Ilford Limited in 1901, started on an ad hoc programme of acquisition from 1895. The first major purchase was the business of Austin Edwards. Ilford acquired the Edwards factory at Tottenham where his Queen-branded plates and films were made. Alfred Harman, the founder of the Britannia Works Company, had rejected the idea of making films in 1892 but Edwards's success in film manufacture, especially the distinctive notched films for R. and J. Beck's Frena

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<sup>267</sup> The National Archives, Kew, BT 31/31523/52633, Cadett and Neall, Ltd. See also: Michael Pritchard, 'Cadett and Neall Dry Plate Ltd.' in John Hannavy, *Encyclopedia of nineteenth century photography*, New York: Routledge, 2008, pp. 234-235.

range of cameras, forced a change of heart. The acquisition of Edwards's company was the quickest way to expand into a new product area bringing with it not just the physical plant and buildings, but the technical knowledge and expertise of Edwards. After the takeover Edwards was employed as factory manager and the Britannia Works Company continued with the manufacture of Edwards's products under the Ilford name.<sup>268</sup>

Edwards left the Britannia Works Company in October 1895 and quickly re-established himself as an independent plate and film manufacturer in Warwick. Poor financial performance during the early twentieth century precluded further major acquisitions by Ilford Limited until 1918. After this, Ilford was in the forefront of this activity until the mid-1930s. By that time it had taken over most of the extant British manufacturers of sensitised plates and films.<sup>269</sup>

Elsewhere, the business of B. J. Edwards and Company at Ealing, which had undergone a number of incarnations with and without its founder was taken over in 1909. Edwards' company had been amongst the earliest dry plate makers, starting manufacture around 1882.<sup>270</sup> The Leto Photomaterials Company (1905) Limited, which took over B. J. Edwards, continued to make a range of Edwards plates and films. Elsewhere the Gem Dry Plate Company Limited, founded in 1895, was taken over by the Imperial Dry Plate Company Limited which retained a controlling interest in the firm.

By 1914 the majority of British sensitised goods were being produced by a small number of large companies. This represented a complete reversal of the position for much of the period up to the 1890s when a large number of small companies had been making sensitised goods. Although there was not the range of products associated with

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<sup>268</sup> R. J. Hercock and G. A. Jones, *Silver by the ton. A history of Ilford Limited 1879-1979*, London: McGraw-Hill Book Company, 1979, pp. 37-38.

<sup>269</sup> See: 'The family tree of Ilford Limited 1879-1979' in R. J. Hercock and G. A. Jones, *Silver by the ton. A history of Ilford Limited 1879-1979*, London: McGraw-Hill Book Company, 1979, p. 162. This provides a summary of Ilford's takeovers.

<sup>270</sup> S. F. W. Welford, 'B. J. Edwards, Victorian photographer, inventor and entrepreneur', *History of Photography* 13 (2) April-June 1989, pp. 157-163; 'News and Notes', *British Journal of Photography* no. 2564, vol. 56, 25 June 1909, p. 504.

individual manufacturers there was still a wide variety of materials available. These were easily available and produced to a consistent standard. More importantly, there remained strong competition between individual manufacturers and this helped keep prices low.

#### *Photographic equipment companies*

From the 1890s there was a limited amount of consolidation amongst photographic equipment manufacturing companies. The most significant event was the formation of Houghtons Limited in 1904. This brought together the firms of J. Levi & Company, wholesale opticians and dealers in photographic apparatus and appliances, Spratt Brothers, manufacturers of photographic, scientific, and other apparatus and appliances, Holmes Brothers, manufacturers of photographic apparatus and appliances and the business of Alfred Charles Jackson, a manufacturer and dealer in photographic apparatus and appliances, together with that of George Houghton and Son Limited. The new company was private and capitalised at £175,000 and it became the largest photographic equipment manufacturer in the United Kingdom (see Illustration 33). For Houghton the other companies added technical expertise to its own considerable experience in manufacturing cameras and equipment, as well as extending manufacturing plant and manpower. The new company stated:

The combination of manufacturing and distribution interests of which the new company will consist will place us in the position of being the largest manufacturers of photographic cameras and apparatus, as well as being the largest distributors of photographic goods generally in Great Britain.<sup>271</sup>

A new factory was opened in 1908 at Walthamstow employing over one thousand people.<sup>272</sup> Elsewhere, W. Butcher and Sons Limited took over the firms of Bessus and Company, photographic apparatus manufacturers, in 1904, and Charles Tyler and England Brothers, mount manufacturers, in 1907 which complemented its existing

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<sup>271</sup> 'Messrs George Houghton and Son Ltd. Houghtons Ltd.', *British Journal of Photography* no. 2289, vol. 51, 18 March 1904, p. 229.

<sup>272</sup> 'A modern camera factory', *The Photogram*, no. 172, vol. 15, April 1908, pp. 118-121. The article describes the new Houghtons Ltd works.



business.<sup>273</sup> Houghton and Butcher themselves established a joint company in 1915 and pooled manufacturing resources before merging fully in 1926.<sup>274</sup>

For smaller photographic equipment manufacturers consolidation was generally not undertaken. Most had retained old-fashioned techniques of manufacturing and traditional product lines which would offer little commercial benefit to a new owner. A few were taken over and a number moved from manufacturing to concentrate on retailing. The overall number of small manufacturing firms declined as owners retired and businesses closed. Firms such as W. Watson and Sons, J. Lancaster and Son, and the Thornton-Pickard Manufacturing Company, which all had large and successful businesses, grew through their own expansion rather than by amalgamation.

### **Foreign imports and foreign firms**

The British photographic industry did not exist in isolation. There was a steady stream of foreign firms coming into Britain keen to sell their goods to British consumers from the 1840s, which grew rapidly from the 1890s. Britain's general policy throughout the period was one of free trade with the rest of the world. Protectionism had little impact on the wider commercial environment and ensured that there were few barriers for foreign traders coming to Britain. This contrasted with countries such as the United States and Germany, which adopted a more cautious approach and protected their home markets against imports through the imposition of import tariffs.

#### *Early foreign trade*

From photography's earliest days photographic equipment had been imported and exported. French firms supported the introduction of the daguerreotype by supplying

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<sup>273</sup> 'Commercial and legal intelligence', *British Journal of Photography* no. 2282, vol. 51, 29 January 1904, p. 96; 'W. Butcher and Sons Ltd.', *British Journal of Photography* no. 2462, vol. 54, 12 July 1907, p. 515.

<sup>274</sup> Michael Pritchard, 'The Houghton-Butcher/Ensign company tree', *The Photographic Collector*, 5 (2), 1985, pp. 204-205.

equipment and materials to operate the process. American equipment was regularly imported from the late 1840s, although the quantities involved were small. There were smaller amounts of more specialised photographic equipment, such as lenses, coming from Germany. In London, for example, C. R. Pottinger imported Scovill plates from the United States from at least 1854 and a correspondent to the *British Journal of Photography* noted in 1859 that: 'this firm [Scovill] sends a large quantity of goods to Europe, and its annual receipts must be immense to keep so many employed in the sales' department alone'.<sup>275</sup> The Liverpool retailer J. J. Atkinson subsequently became the firm's agent for the United Kingdom and advertised its goods extensively.

In the period up to the 1880s the majority of imports were handled by British agents which would manage the importation and marketing of products. Although most of these were based in London some were elsewhere such as Atkinson who was based in the port city of Liverpool and was ideally placed to meet the boats from America. Atkinson's position also gave him access to the Irish market and he became 'exclusive agent for Ireland and Scotland' of Alexis Gaudin of Paris products.<sup>276</sup> In London Lloyd Chapman described himself as a wholesale agent and 'sole agent for Derogy's patent and other lenses'.<sup>277</sup> Agencies periodically changed hands and in a few instances overseas firms set up a branch in London. Alexis Gaudin and Brother established its 'wholesale depot of French, English, American and German photographic goods' in London as a branch of their Paris business and issued their own English catalogue of goods from around 1855.<sup>278</sup>

The impact of imports on British manufacturers up to the 1880s was slight. Other than offering the consumer a wider choice of goods they came with no particular price

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<sup>275</sup> 'Foreign correspondence', *British Journal of Photography*, no. 93, vol. 6, 1 May 1859, p. 114-115.

<sup>276</sup> Advertisement, *British Journal of Photography*, no. 7, vol. 1, 8 July 1854, n.p.

<sup>277</sup> Advertisement, *British Journal of Photography*, no. 115, vol. 7, 2 April 1860, p. v.

<sup>278</sup> The business is recorded in the Post Office London directories from 1855-1861, but was established in Paris in 1843. Their catalogue notes: 'the only house in London manufacturing and importing the photographic goods, the only one able to give the Paris manufactory address'.

advantage and for most consumers British-made goods were considered superior. They did not divert any significant demand away from British manufacturers. With the growth of a larger consumer market from the mid-1880s imports began to assume a greater prominence as overseas manufacturers sought to enter the British market. Increasingly foreign photographic equipment was distinctive compared with locally-made goods. Imports began to offer the consumer a greater variety of products with cameras, for example, from the United States often being better designed and increasingly competitively priced. British manufacturers realised that they represented competition that, for larger firms, had to be met head on with better and lower priced products.

During the early twentieth century the subject of imports and exports began to be linked with wider aspects of nationalism and patriotism. J. B. B. Wellington, the president of the Photographic Convention, articulated this at the end of his presidential address in 1911.<sup>279</sup> In presenting his overview of photography he ended by noting a preference for British-made goods, with a growing demand for British plates and papers and a preference for apparatus 'in the higher qualities'. He concluded by saying 'I am confident that the next ten years in the history of the photographic trade will see British manufacturers more than holding their own'. His observations did not wholly accord with the actual situation. Imports exceeded exports and consumers increasingly preferred cheaper cameras to higher quality cameras, reflecting the greater importance and growth of the snapshotter. Kodak, for example was selling significant quantities of cameras that were all made in the United States. Wellington's optimism about the future of the British photographic industry was also misplaced. By 1911 foreign competitive pressures were already impacting on the British industry.

#### *Imports*

From the limited data available some sense of the scale of imports can be had for the

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<sup>279</sup> J. B. B. Wellington, 'The president's address', *British Journal of Photography*, no. 2671, vol. 58, 14 July 1911, pp. 527-530.

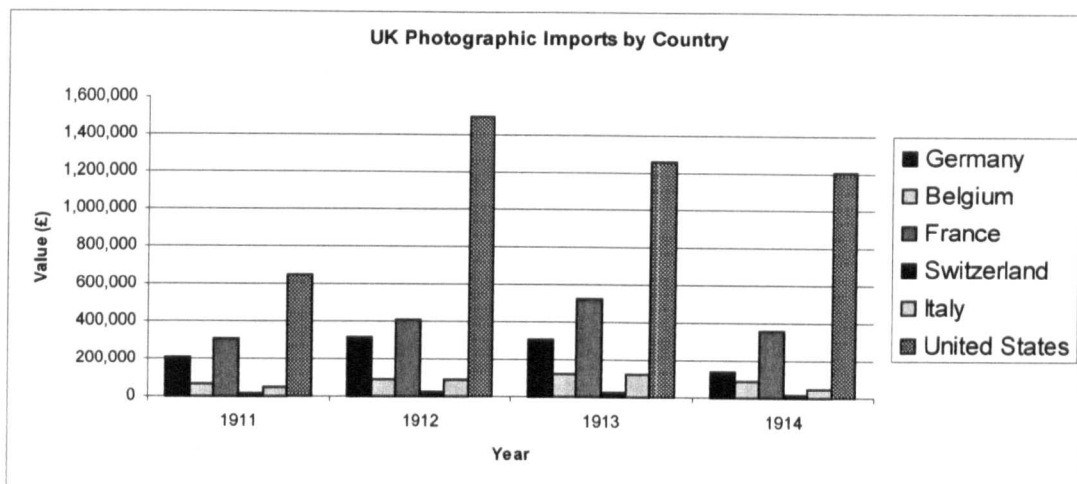


Figure 13. Photographic Imports into the UK by Country.<sup>280</sup> Source: *Annual Statement of Trade of the United Kingdom, HMSO, 1915.*

period between 1910 and 1914 and is represented in Figure 13. The United States, France and Germany were the key sources of photographic goods into Britain. In the case of the United States a large part of this represented imports by Eastman Kodak bringing in cameras and sensitised goods for the British market and goods for subsequent re-export by Kodak Ltd which had responsibility for the company's non-north American sales. Kodak did not establish a British camera manufacturing facility until 1928. The German totals reflected the import of cameras for W. Butcher and Sons, which were re-badged and sold under their own name.

Agencies for overseas firms continued to be popular up to 1914. They were an economical way for a non-British manufacturer to get its products in to a British market with a financial incentive for the agent to market and maximise sales. Agencies would generally handle items related to their own areas of business so, for example, Negretti and Zambra was appointed sole agent for the German optical manufacturer Steinheil and Sohn's lenses in 1883 which supported their own range of optical goods.<sup>281</sup>

<sup>280</sup> Prior to 1911 photographic goods were included with other categories and are not able to be distinguished separately.

<sup>281</sup> 'Steinheil's lenses', *British Journal of Photography*, no. 1204, Vol. 30, 1 June 1883, p. 318.

The mid-1880s marked the start of a period of expansion for foreign imports, often through agencies, reflecting a response to the burgeoning market of amateurs and snapshotters. Foreign firms were quick to recognise this and a number of manufacturers began to advertise for British agencies. Tailfer & Clayton, for example, advertised for a British agent in 1884 for its isochromatic plates which had been sold for several years in continental Europe.<sup>282</sup> Other agencies were also set up, Negretti and Zambra became agents for Germany's Monckhoven dry plates by 1888 and Samuel Fry & Company Limited, became sole European agents for the American Blair cameras in 1889. These are just two examples of many.

Agencies worked well for smaller firms unable or unwilling to finance the setting up of a formal office and staff. For larger firms with more resources increasing sales could justify the setting up of a branch office, which was usually located in London. The Eastman Company set up a branch office in London in 1885 which was responsible for all the company's sales outside of north America. The office was situated in Soho Square and was a wholesale outlet for Eastman's goods as well as those of other American manufacturers including the Scovill company.<sup>283</sup> In 1893 the European Blair Company Limited was incorporated and its agency arrangement with Samuel Fry and Company was terminated.<sup>284</sup> The company was formed for two purposes: firstly, to acquire and hold all of the patents and patent rights of the Blair Camera Company of Boston, USA, and, secondly, to sell and market photographic equipment and materials made or acquired by the company. Thomas Henry Blair was made general manager and, in addition to the central London selling office, the company established a manufacturing plant at Sidcup, Kent. It continued until 1907 when it was wound up. By

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<sup>282</sup> Advertisement, *British Journal of Photography*, no. 1281, vol. 31, 21 November 1884, p. i. By the end of the year B. J. Edwards and Company was advertising that it had: 'purchased the sole license for the manufacture of Dry Plates by the above process in Great Britain and the Colonies, together with the exclusive right to use the registered title "Isochromatic"'.

<sup>283</sup> Reese V. Jenkins, *Images and Enterprise. Technology and the American photographic industry 1839 to 1925*, Baltimore: The John Hopkins University Press, 1975, p. 107.

<sup>284</sup> The National Archives, Kew, BT31 5568/38733. The European Blair Company, Limited.

1912 many other larger American and continental European firms had branch offices in London.

The impact of camera imports was noted by the photographic press in 1902. One journal described watching amateur photographers in Whitehall, London, and commented that in one ten-minute period around one hundred plates or films were probably exposed. It noted that 'with one or two exceptions, we recognised that all these cameras were of foreign make – French, American, or German – and it struck us that there must be a great lack of British enterprise for that to be the case'. The writer identified the cause of this being the difference in manufacturing methods of British cameras against foreign made cameras:

The real reason is that in the manufacture of these cameras the greater portion of the work is done almost automatically by machinery. It is true that the necessary plant is somewhat costly to install, but if it pays other countries to install it, one would have thought that it would pay Britishers equally as well to go to the cost. Evidently, however, they do not seem to think so, or possibly do not have the business enterprise for it. But the fact remains that thousands of foreign-made cameras are imported into this country weekly which, quite as well, might have been made at home <sup>285</sup>

With the passing of the age of hand-made cameras and the commissioning of new factories built for mechanistic methods of mass-production, notably the Houghtons factory from 1908, British firms attempted to respond to foreign imports.

### *Exports*

The export of British photographic goods to the United States or Europe was limited until the 1880s. Until then, as in Britain, local manufacturers could easily supply their own market with products that had little to distinguish them from those of competitors. Exports from Britain could not compete on price, although innovative designs found a ready market. As the British industry was generally small and goods were mostly hand-

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<sup>285</sup> 'Foreign made cameras', *British Journal of Photography*, no. 2202, vol 49, 18 July 1902, p. 562.

Year	Country	Value of Imports and notes
1908	Australia	£46,144. Of which £12,254 (cameras and lenses); photographic materials (£18,731); £15,159 (sensitised films, papers and postcards)
1910	Brazil	£5500
1910 (7 months)	Japan	£16,997
1911 (7 months)	Japan	£22,101
1910	Russia	£32,000. Photographic and other instruments
1911	Russia	£54,000. Photographic and other instruments

**Table 11. United Kingdom exports to selected overseas countries.**

*Source: photographic press reports of trade statistics.*

made then there was little need, and limited capacity, to generate overseas demand. Most manufacturers of photographic equipment advertised their ability to supply overseas markets even if the reality, other than to the British Empire, was limited. The introduction of mass-production of sensitised materials for a home market from the 1880s and, a little later, of equipment began to change this.

Increases in home demand was a catalyst for mechanisation and the better keeping properties of sensitised plates ensured that materials could be shipped and arrive in good condition. A combination of declining prices, the recent ability to supply a market beyond a local one and the maintenance of quality helped British manufacturers supply an overseas market. Manufacturers increasingly began to export goods abroad, generally working through local agents in America and Europe and elsewhere. British retailers supported this by promoting their ability to handle export orders and to quantify the cost of shipping to different destinations.

The expansion of the market for photographic goods further supported the growth of the British industry, but there were barriers. Unlike Britain which had low import tariffs other countries adopted protectionist measures. The United States introduced new tariffs in 1894 on foreign imports which represented: 25 per cent on cameras if mainly of wood; 33 per cent, if metal and 35 per cent if a lens was attached; 35 percent on lenses (previously 60 per cent); 25 per cent on dry plates and films (previously 60 per cent) all

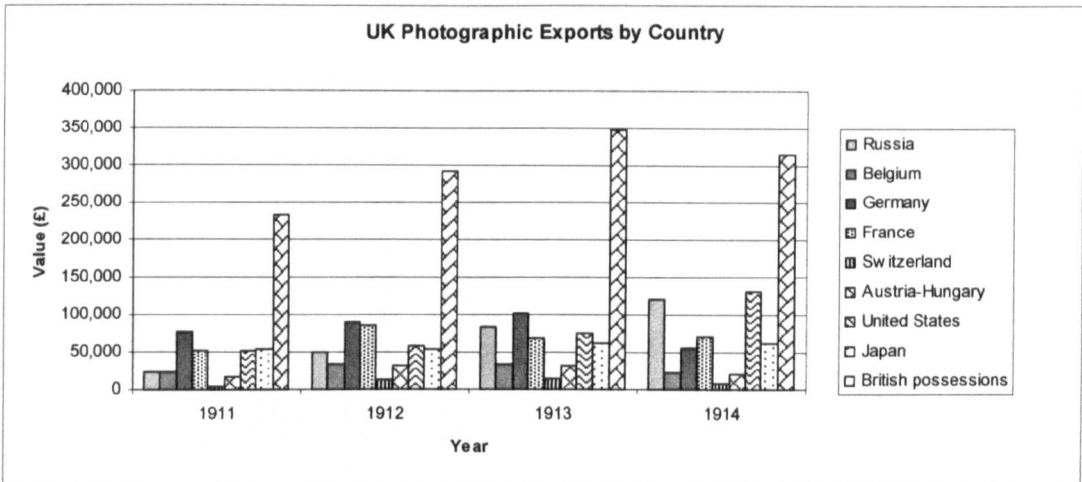


Figure 14. Exports of Photographic goods from the United Kingdom by selected countries.<sup>286</sup> Source: *Annual Statement of Trade of the United Kingdom, HMSO, 1915.*

in proportion to their value.<sup>287</sup>

In the absence of detailed government figures recording imports and exports throughout the period it is difficult to quantify the exports that emanated from the United Kingdom. Occasional reports in the photographic press regarding imports into particular countries make it clear that photographic materials were exported to a significant degree (see Table 11).

In 1911 photographic goods were given a separate category in British trade statistics and Figure 14 shows total photographic exports. In the United States sales of roll film and film packs were dominated by Eastman Kodak which had 90 per cent of the market in 1911. Exports from Houghtons Ltd were estimated at \$50,000 or 1.5 per cent of the market.<sup>288</sup>

<sup>286</sup> See note 280.

<sup>287</sup> 'The new tariff on photographic materials', *British Journal of Photography*, no. 1796, vol. 61 5 October 1894, p. 635.



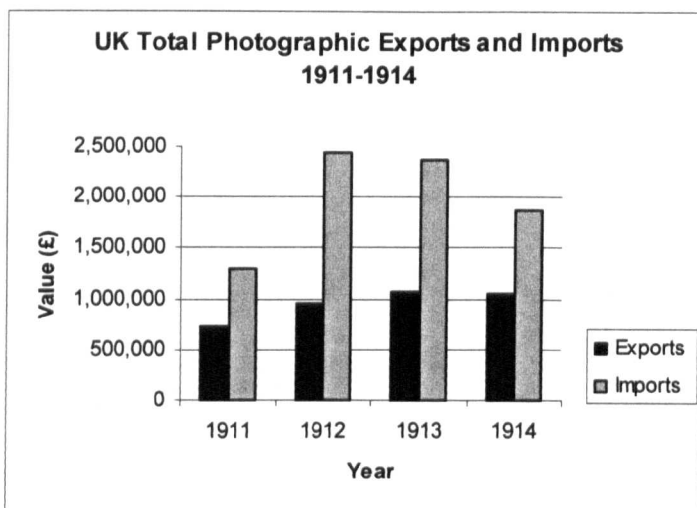


Figure 15. Photographic imports/exports 1911-1914. *Source: Annual Statement of Trade of the United Kingdom, HMSO, 1915*

Certain companies took advantage of the export potential for their goods so that, for example, the Altrincham camera maker Thornton-Pickard began issuing its catalogue in French, German and Spanish languages, in addition to its English edition.<sup>289</sup>

Competition overseas was also strong. In the Bilbao region of Spain, which had no indigenous photographic industry, French manufacturers had traditionally dominated supplies. By 1900 they had been supplanted by German manufacturers which were able to undercut the French on price. The *British Journal of Photography* noted that:

British houses are stated to confine themselves to sending catalogues of their goods; there also appears to be an impression abroad that British photographic materials would be more expensive than German, and the cameras and plates would be made to measure different from those in current use.<sup>290</sup>

Although separate figures for photographic equipment and sensitised materials are not available for the whole period it is likely that Britain was a net exporter of these for

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<sup>288</sup> The estimate by Eastman Kodak was EKC 90% (\$2,920,999), Ansco 7.7% (\$250,000), Lumière 0.8% (\$25,000) and Houghtons 1.5% (\$50,000) in D137. Lawrence P. Bachmann Papers, University of Rochester.

<sup>289</sup> 'Commercial intelligence', *British Journal of Photography*, no. 2083, vol 47, 6 April 1900, p. 222.

<sup>290</sup> 'Commercial intelligence', *British Journal of Photography*, no. 2085, vol 47, 20 April 1900, p. 254.

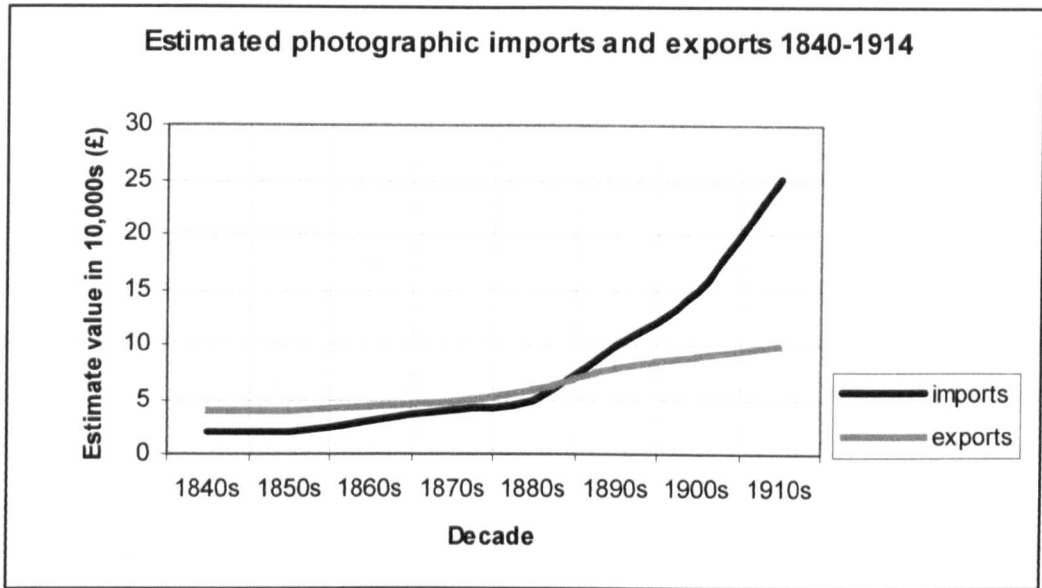


Figure 16. Estimated United Kingdom photographic imports/exports 1840-1914.  
 Source: *Annual Trade Statistics and author's estimates.*

much of the nineteenth century and that imports did not overtake exports until the early 1890s. By the end of the period total exports were exceeded by imports, as Figure 15 shows.

This change is explained by the growth of the American and German photographic industries. Their adoption of more efficient manufacturing methods gave them a price advantage over and an ability to compete against British goods, which benefited their exports to Britain. How significant imports were in respect of the overall market for photography is more difficult to determine. It would be reasonable to assume that imports/exports represented a relatively small proportion of total manufacturing output. Figure 16 provides an estimate of the value and relative positions of imports and exports throughout the period. The late 1880s and early 1890s represent the key period when imports exceeded exports as the growth of popular amateur photography boosted consumer demand.

## The 'Americanisation' of manufacturing

The respected photographic editor J. Traill Taylor, writing in 1880 from New York, compared traditional British workmanship in camera making with the American Optical Company, which produced 'utilitarian' and 'spartan' products but, which he admitted, were often better designed and suited to their purpose.<sup>291</sup> The 'Americanisation' of manufacturing was frequently commented upon by the photographic press. It viewed it, rightly, as a threat to British photographic manufacturers and its traditional dominance of the production of photographic equipment. The concept introduced specialisation amongst employees, standardisation of parts and a limited range of products. Combined with it were changes in the corporate structure and the organisation of the firm with the introduction of professional managers. Better manufacturing techniques and the professionalisation of management worked to enhance the way businesses operated.<sup>292</sup>

By the later 1890s American products - cameras and sensitised materials - began to enter Britain in greater numbers, especially into the amateur market. Therefore, British manufacturers felt the impact of the 'American system' of manufacturing. In the United States, George Eastman's Kodak company was the best example of this (see Illustration 34). Eastman's manufacturing plants were organised as continuous production lines with employees undertaking specialist work handling parts that could be used across product types and a range of products that made use of a limited range of variants. Eastman recognised that he was unable to oversee every aspect of his company and brought in competent individuals to manage specific aspects of his business and reported to him. These methods supported mass-production and provided efficiencies which kept the unit cost of production to a minimum and ensured that goods exported to

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<sup>291</sup> J. Traill Taylor, 'New York correspondence', *British Journal of Photography*, no. 1073, vol. 27 26 November 1880, p. 573. Taylor (c.1827-1895) was one of the most important and influential figures in the photographic press from 1856 until his death.

<sup>292</sup> The first exponent of this was Alfred D. Chandler Jr. in his *The Visible Hand: The Managerial Revolution in American Business*, Cambridge: Harvard University Press, 1977. Chandler argued that the growth of the corporation in the late nineteenth century sparked a major transformation in American industry, as a new class of professional managers changed how business was conducted within the large firm.

Britain remained competitive, even after the international shipping costs were factored in.

With a few notable exceptions in Britain most manufacturing was undertaken by small businesses usually owned and run by the founder, and employing a small number of workers. There was little specialisation in manufacturing with employees working on a product from start to finish. The impact of competition from Kodak and the rise in imports effected a change to these new techniques in the largest manufacturers. Firms aiming to produce equipment and sensitised materials for the mass market increasingly adopted the new methods of production. They introduced assembly lines and a standardised range of products which helped bring the cost of production down. The *British Journal of Photography* in an editorial comment in 1903 made note of the changes it had recognised:

Within the last two decades a great change has come over our manufacturing methods, and "rule o' thumb" and haphazard ways generally have had to give way to micrometric measurements and interchangeability of parts...although it would be an exaggeration to say that some of these [woodworking] machines receive a block of wood at one end and eject a camera at the other<sup>293</sup>

Within the British context the adoption of 'American' methods was only done in part. Amongst camera makers Thornton-Pickard, Watson and Stanley adopted the new methods of manufacturing. The manufacturing processes for sensitised goods manufacturing moved to mechanised coating, drying and cutting plates away from the traditional coating plates with a teapot. The second aspect, the business management of companies, was more entrenched and British firms of any size did not generally bring in professional management. The death of a firm's founder and conversion to a limited company would on occasion bring in new managers but even by the 1930s most British photographic companies were still run directly by the founding family at both director and senior management level. The only notable exception was Ilford Ltd which had no family representation on the board and was run solely as a public company for the

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<sup>293</sup> 'Manufacturing methods', *British Journal of Photography*, no. 2257, vol. 50, 7 August 1903, pp. 623-624.

benefit of shareholders. American forms of company management failed to have any significant impact in Britain.

### **The growth of sensitised goods manufacturers 1890-1914**

By the 1890s sensitised goods manufacturing was established with differing degrees of mechanisation in the manufacturing process. For companies founded in the 1880s or 1890s such as Wratten and Wainwright or Cadett and Neall mechanisation and output was on a far greater scale and conducted with more rigour than in smaller firms. The *Photographic Chronicle* 'was struck by the large amount of modern machinery' at Illingworth & Company's new factory when it visited in 1901.<sup>294</sup> Those firms founded earlier continued to use traditional methods. Between the 1880s and early 1900s a number of larger sensitised goods manufacturers established themselves when the market for plates, films and photographic papers expanded dramatically. This growth was supplemented by firms such as Marion & Company, which established a sensitised materials manufacturing department as part of its main business. T. N. Armstrong at the Photographic Convention meeting in 1898 estimated that there were nearly forty-five firms in the United Kingdom making dry plates.<sup>295</sup>

These companies were responding to increasing demand from consumers – principally amateurs and snapshotters – for photographic materials to produce and make photographs upon. The standardisation of measuring sensitivity around the Hurter and Driffield method which made results more predictable, supported this process. At a basic level, little capital was required to enter production but most firms during this

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<sup>294</sup> Illingworth & Co. had been founded in 1890 before moving to Willesden in 1893. 'A visit to Messrs Illingworth and Co.'s new factory', *The Photographic Chronicle*, 15 June 1901, p. 8.

<sup>295</sup> T. N. Armstrong, 'On a standard speed for dry plates and films', *British Journal of Photography*, no. 1993, vol. 45, 15 July 1898, pp. 453-456.

period were setting themselves up to manufacture on a large scale. This required capital to establish factories and to purchase plant and machinery.

Although there was a market for many firms each producing wide ranges of plates and papers under different names, Alfred Watkins, a manufacturer of photographic exposure devices, argued in 1911 that there was no justification for the large number of different brands and labels. He noted that each manufacturer issued around ten brands of plates and argued for a reduction in the numbers of brands so that the retailer could keep a more limited stock and keep plates fresh.<sup>296</sup> Watkins was not arguing for a limit on the number of competing firms – he viewed competition as leading to efficiencies and reduced prices – but he saw the situation as one where there was ‘a tendency to stale plates in the hands of the dealer, to the detriment of the consumer’. He proposed a more limited number based on three general bands of sensitivity: ordinary, rapid and top speed. Whether his concerns were justifiable is questionable. Larger retailers generally turned over stock quickly and only ordered supplies of materials they could sell.

The availability of a wide-ranging type of plates, films and papers from multiple manufacturers during the period to 1914 was simply a reflection of the depth and breadth of the market for photographic goods from professionals and, more importantly, from amateurs and snapshotters. Photography was a trade and increasingly by 1914 a hobby - an activity undertaken as a leisure pursuit - with a retail environment that was equipped and able to offer advice and support.

#### *Centres of photographic manufacturing*

Throughout the period to the 1880s London was unquestionably the centre of photographic manufacturing within Britain. There were more manufacturers within the city than in any other industrial centre and London was essential in supplying the commercial and amateur markets for photography. That is not to say that there were no

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<sup>296</sup> Alfred Watkins, ‘The undue multiplicity of brands of plates’, *British Journal of Photography*, no. 2671, vol. 58, 14 July 1911, pp. 530-531.

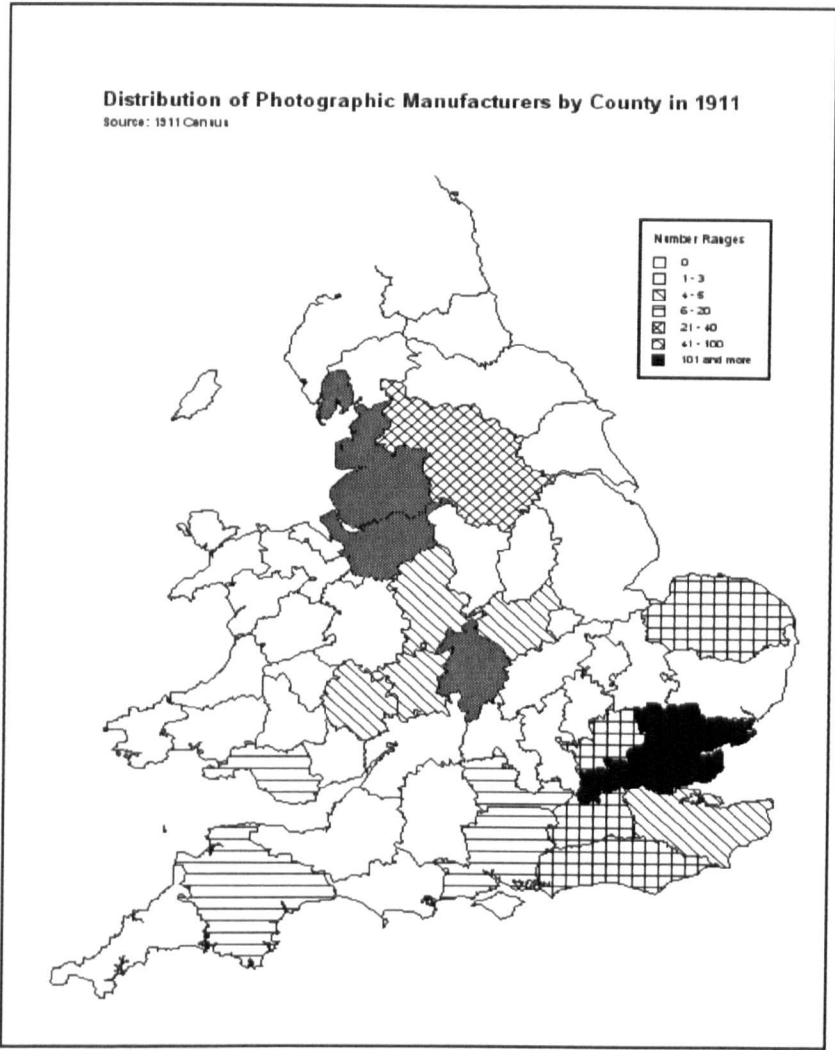


Figure 17. Distribution of photographic manufacturers in Britain in 1911 showing the number of people employed in photographic manufacturing by county. *Source: 1911 Census.*

other manufacturers elsewhere; there were, and some were significant in terms of their size. After the 1880s this general pattern broke down as some of the larger manufacturing areas outside of London, principally Manchester, Birmingham and Leeds became home to significant photographic manufacturing factories.

Numerous issues need to be addressed before any assessment of the relative importance of London against other centres can be made. Although the absolute numbers of manufacturers are available from trade directories and photographic sources it is more

difficult to quantify the size of individual manufacturers in terms of the volume of their output or in terms of the structure of their firm, the number employees and level of mechanisation.<sup>297</sup>

The principal areas of manufacturing rivalling London were Birmingham and Manchester and smaller centres in Glasgow, Leeds, Liverpool and Newcastle – all of which were the main manufacturing districts of Britain. The final census for the period covered by this study in 1911 records a pattern of individual workers that had taken nearly seventy years to evolve. Figure 17 shows the distribution of individuals engaged in photographic apparatus manufacturing by county. It does not include sensitised goods manufacturers, which were not distinguished separately. The map clearly shows the concentration in London which also included parts of Essex where the Houghton factory was located, the Birmingham area and Lancashire, which included Manchester and the Altrincham factory of Thornton-Pickard, together with smaller concentrations in West Yorkshire, which included Leeds. After that the numbers get considerably smaller.

The location of plate, film and paper manufacturers was more varied although they tended to concentrate close to markets, although most brands were sold nationally and internationally. The environmental conditions were of more importance with clean water and an unpolluted atmosphere frequently cited as reasons for the location of factories. There are signs of a movement of such plants away from city centres to the outer fringes. Transport links were also important to get manufactured goods to markets across the United Kingdom and to distributors. In this respect proximity to London was a key factor in the siting of such factories and most were with twenty-five miles of London, with the occasional notable exception such as Mawson and Swan's factory in Newcastle upon Tyne.

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<sup>297</sup> In the absence of reliable and consistent data a number of assumptions need to be made regarding particular firms. The number of firms producing on a large scale is relatively small.



## Manchester

Manchester's position as the first industrial city in the world, based on cotton, but extending to general manufacturing, engineering and commerce meant it was well served by scientists and manufacturers able to enter photographic manufacturing. It offered retail outlets that could add photography to an existing business and a ready market of individuals keen to take up amateur photography. Although Manchester was home to a number of experimenters and amateurs practicing photographic processes, manufacturing was generally slow to take off.<sup>298</sup> There was only a limited amount of small-scale production prior to the mid-1860s and then limited production until the later 1880s and 1890s.<sup>299</sup> Manchester's strong association with dyeing and the chemical industry ensured that it was the chemists that were amongst the earliest to involve themselves in retailing photographic materials. Joseph John Pyne was established in the 1850s as a photographic manufacturer and retail of apparatus and photographic materials. The business was taken over by Robert Hampson, a pharmaceutical chemist, before being taken over in 1871 by the partnership of J. T. Chapman and J. B. Payne.<sup>300</sup> During the early period up to the 1880s the Manchester photographic scene was a closely knit network of scientists, amateurs and manufacturers. The Manchester Photographic Society, which was formed in 1855, acted as an important contact point between different personalities and being used to demonstrate new apparatus from, for example, J. B. Dancer and members of the trade such as Pyne serving on the Society's council in 1861 and 1862. Dancer himself served on the photographic section of the Manchester Literary and Philosophical Society between 1865 and 1869. By 1895 the

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<sup>298</sup> See: J[ames] G. Chapman, *Manchester and Photography*, Manchester: [J. T. Chapman], 1934, which briefly discusses the history of photography in Manchester before presenting a history of the business of J. T. Chapman and associated firms.

<sup>299</sup> See: David A. Davis, 'The Manchester camera makers 1853-1940', *The Photographer*, no. 68/69, Winter/Spring 1986, pp. 10-33. Davis gives an overview of a number of the main Manchester camera manufacturers. Although later research has since revised some of the information the study provides a useful summary of the photographic manufacturing trade over the period.

<sup>300</sup> E. H. Richards, *The Manchester camera shop*, Timperley: E. H. Richards, 1984.

city had twenty-one photographic manufacturers and dealers listed in the trade directory.<sup>301</sup>

### *Birmingham*

Birmingham rose to prominence during the industrial revolution growing from a small town to a major industrial centre. By the 1830s it was well connected with the rest of Britain via an extensive canal system and by 1837 the railways had arrived linking it directly to London. Industrially Birmingham had a long-standing reputation for small arms manufacturing which extended to engineering and manufacturing trades so that by the 1840s it was already established as the 'workshop of the world'. Into this, manufacturing for photography started gradually. Established manufacturers, such as Elkingtons with a reputation for plating, made silvered plates for daguerreotype use and it is likely that metal fittings for cameras were made and used by manufacturers elsewhere, although there is no direct evidence for this.

Although there was some small-scale photographic manufacturing taking place from the early 1840s it remained on a modest scale. In 1849 a photographic plate manufacturer and photographic glasses manufacturer and retailer were listed.<sup>302</sup> By 1858 twelve manufacturers and retailers were listed with most of the manufacturers producing specialist requirements such as cases, mounts and albums.<sup>303</sup> Birmingham's direct involvement with photography on a large scale started from the 1870s and by the late 1890s some forty-one dealers and manufacturers were being listed which had declined

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<sup>301</sup> *Slater's Manchester and Salford Directory for 1895*, Manchester: Slater's Directory Ltd, 1895. As with all such listings this is likely to be an under-estimate as it does not include chemists and shops selling photographic goods as part of a wider business.

<sup>302</sup> *Birmingham. History and general directory of the Borough of Birmingham*, Sheffield: Francis White & Co., 1849, p. 178, 187. William Barlow Henshaw was the plate maker and was listed in 1849 and 1854. William Hume and Company, was an optical dealer and listed from 1846-1880.

<sup>303</sup> *General and commercial directory of the Borough of Birmingham*, Sheffield: W. H. Dix and Company, 1858, p. 455.

to twenty-four by 1913.<sup>304</sup> With the exception of the large firms of J. Lancaster, E. and T. Underwood and the Midland Camera Company, most of Birmingham's firms were small manufacturers often making very specific types of photographic goods such as photographic lamps, glass, frames, bellows, lamps and screens.<sup>305</sup>

#### *Relative numbers of firms*

Although Birmingham and Manchester were secondary centres of manufacturing they were considerably behind London in terms of the number of firms involved and their output. Both centres had at least one significant volume manufacturer by the 1890s but London, too, had many volume manufacturers alongside a large number of smaller firms. In the 1890/1900 period the total number of manufacturers and retailers in various British cities were: Manchester – 21; Liverpool – 12; Birmingham – 41 and Newcastle – 2. London, by comparison, had 283 comparable businesses.<sup>306</sup>

#### **Changes in camera making from 1900 to 1914**

Between 1900 and 1914 competitive pressures on camera and photographic equipment manufacturers changed the industry and accelerated numerous trends which had been apparent since the 1890s. Small workshops and individual manufacturers declined. Larger scale production increasingly became the norm and production was focused on the mass-market with cheaper box and folding cameras.

The reduction in the number of small scale manufacturers was the result of several

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<sup>304</sup> *Peck's Circular Trades Directory and detailed buyers' guide to the manufactures of Birmingham and district 1896-97*, Birmingham: Peck, 1896-97, 171, 205; *Birmingham 1913*, London: Kelly and Co., 1913, p. 896, 1055, 1056.

<sup>305</sup> 'Notes on the industrial side of photography in Birmingham', *The Photogram*, no. 77, vol. 7, May 1900, pp. 158-162. The whole issue was devoted to photography in Birmingham.

<sup>306</sup> The London figure is taken from the *Post Office London directory* for 1896 and includes comparable trades with the other cities.

factors. Those manufacturers that had entered into business during the late 1850s and 1860s during the start of the growth of a specialised industry were reaching retirement or death. Unless they had expanded their business or had a specialised product then the business generally ceased. In 1899 there were sixty-eight photographic apparatus manufacturers listed in London, which by 1913 had fallen to fifty-five, of these only eighteen had been listed in both years.<sup>307</sup> The firms disappearing included long-established camera makers such as George Hare and Patrick Meagher which had barely expanded or changed their product range over their lifetime. There were occasional exceptions: Louis Gandolfi was producing cameras in a traditional way and the business continued to do so until the 1980s but he was also working for other camera makers as a subcontractor. Those camera making firms listed in 1913 increasingly focused on retailing activities and had largely stopped manufacturing or they would cease business soon afterwards.

There had been some consolidation amongst firms which had further reduced the number of individual firms and larger-scale production began to dominate. Houghtons opened a major factory in 1908 and Kershaw of Leeds expanded its factory and manufacturing at about the same time. Kershaw made cameras and equipment for Marion & Company, Ross, and others to sell under their own names. Thornton-Pickard's factory was still producing significant quantities of wooden field camera and it had expanded its output by introducing a range of snapshotter cameras alongside new styles of camera that moved away from its mainstay of mahogany field cameras. By 1910 the company was beginning to contract as its traditional products failed to compete and were not what the new markets wanted to buy. Lancaster's business model of using outworkers for assembly also began to prove less durable as cameras began to rely on metal parts requiring more expensive and complex machinery. Hand-assembly which worked well for the relatively simple mahogany cameras was not suited to the mass-production of cheap snapshotter cameras. Their product range was old-fashioned and the company began to import cameras from Germany to sell under its own name. It

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<sup>307</sup> For consistency no attempt has been made to remove firms that were principally retailers and having equipment made for them. By 1913 the list includes companies making cinematographic equipment.

began to concentrate on assembling photographic enlargers which could be done using traditional methods.<sup>308</sup> W. Butcher, too, began importing cameras from Germany, notably from Emil Wünsche and Hüttig. Kodak's importation of cameras and equipment and ability to sell through a network of dealers to the mass-consumer market also influenced the British industry. Only Houghtons was able to compete with large volume production.

There remained a small number of London-based manufacturers of which Newman and Guardia and Adams and Company were the best known, and these produced limited numbers of high-quality products. These had little or no competition from overseas manufacturers. They occupied a niche market with total production runs for some cameras in the low hundreds and few models reached four figures, over runs of many years (see Illustration 35).

While the overall trend in photographic manufacturing was, in the words of J. B. B. Wellington, towards 'simplification, to give the photographer apparatus and materials with which it was almost impossible to go wrong' the three strands of the camera market showed varying degrees of change.<sup>309</sup> The professional portrait market remained unchanged with larger format studio cameras remaining the preferred option. These required little updating of camera designs and with the number of professional studios relatively static there was only a small demand for new equipment. For the amateur the trend was towards smaller field cameras with the whole-plate format giving way to smaller 5 x 4 inch or quarter-plate hand cameras. For the snapshot market, small, simple, hand cameras, falling plate and box cameras were preferred and as such dominated the output of Houghton, although the firm made all types of camera. These cameras were relatively simple to produce and a number of smaller manufacturers produced their own versions, albeit in limited quantities. The economics of small-scale

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<sup>308</sup> Colin Munro, *A guide to Lancaster cameras*, Tunbridge Wells: Colin Munro, 1996, p. 8. The retirement of W. J. Lancaster from the business in 1910 marked a major change in the company's output and it began to contract significantly, although it remained in business until 1954.

<sup>309</sup> J. B. B. Wellington, 'The president's address', *British Journal of Photography*, no. 2671, vol. 58, 14 July 1911, pp. 527-530.

manufacturing of these was marginal. Kodak's imports to the United Kingdom were concentrated on this latter area with the sale of cameras seen as a means of boosting the more profitable sale of film.

A number of manufacturers failed during this period or decided to leave camera-making completely as market conditions made their products uneconomic to produce. Some felt unable to invest the capital to maintain camera production, particularly where they had other businesses to maintain. Taylor, Taylor and Hobson, for example, which was principally a lens manufacturer, gave up making its reflex camera in 1909 selling that part of the business to Newman and Guardia.<sup>310</sup>

The government's census of production of 1907 provides a small window into photographic manufacturing during this period.<sup>311</sup> The value of cameras and other photographic apparatus, lanterns and cinematographs was reported as £153,000 for England Wales and Ireland and £5000 for Scotland and for photographic materials (plates, papers and films) at £320,000 for Britain. Returns from trades other than scientific instruments trades added £3000 and £589,000 respectively. Lenses for photographic use were not distinguished separately and totalled £78,000 for 'optically worked glass, and prisms of all kinds, when sold separately'.

By 1914 British camera making was split between high volume manufacturers (which also made other types of cameras) such as Houghton, Kershaw, and Thornton-Pickard; smaller firms producing more limited cameras for an amateur market such as Lizars, Rouch and Shew; and high-quality manufacturers such as Newman and Guardia, Dallmeyer and Adams. In addition there were a small number of trade-only

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<sup>310</sup> 'Taylor, Taylor & Hobson reflex cameras', *British Journal of Photography*, no. 2540, vol. 56. 8 January 1909, p. 27. TTH concentrated on lens production which was the core business of the company. The sale to N & G would suggest that the camera was selling only small quantities and was seen as quality item.

<sup>311</sup> *Final report of the first census of production of the United Kingdom (1907)*, London: H.M.S.O., 1912, pp. 800-802, 814. Photographic manufacturing was partly included with other areas such as optical instruments and scientific instruments and relied on the accuracy of the individual firms' submissions. Compared with export statistics the numbers probably under-represent the total.

manufacturers making products for the middle market, with their output being re-badged by large retailers. Imports from the United States, Germany and France supplemented this domestic output with a number of firms importing cheaper foreign-made cameras from Germany, France and Italy, for re-sale under their own brand names.

## Summary

### *Models of business evolution*

Various models of business evolution have been put forward ranging from Urwick's twelve stage model to the more simplistic focusing on company management proposed by Chandler and Daems who gave the labels 'personal', 'entrepreneurial' and 'managerial' to a chronological progression.<sup>312</sup> This latter model provides a useful framework in which to place the photographic manufacturing industry. The three stages Chandler and Daems described were:

- the personal, where an individual performs most of the strategic, functional and operational roles within the business. Habbakuk has described this as 'the traditional form of capitalism' and typical of the late eighteenth-century.<sup>313</sup> It is also applicable to the early specialised photographic businesses of the mid-nineteenth century.
- the entrepreneurial, where the owner-manager delegates responsibility to professional managers, and brings in outside capital from sources unconnected with the family. This phase started, in a very limited way, in the photographic industry, towards the end of the nineteenth century.
- the managerial, where there is a complete split between the control and

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<sup>312</sup> These models are discussed in John F. Wilson, *British business history, 1720-1994*, Manchester: Manchester University Press, 1995, pp.10-19.

<sup>313</sup> H. J. Habakkuk. *Industrial organisation since the industrial revolution*, Southampton: University of Southampton, 1968.

ownership of the business. The strategic, functional and operational management is undertaken by professionals, while the bulk of the equity is held by investors who take no role in running the business. The British photographic manufacturing industry never fully entered this final stage. Most photographic businesses during the period to 1914 and beyond continued to be run and controlled by the original founder or family members.

The photographic industry conforms to the personal in the period mainly before 1880 although many smaller firms were never able to move to the entrepreneurial level. Some larger firms that required capital to expand did enter the next level. There are no examples in the period before 1914 of firms that entered the managerial phase. Even the larger businesses remained mainly in the hands of founding families. In those firms, such as the lens maker Dallmeyer, which became a limited company and subsequently removed from Dallmeyer family control, the running of the business remained with the principal shareholder and owner.

The American Eastman Kodak Company and its British subsidiary, Kodak Limited, fully entered the managerial phase. It is no surprise that Kodak was better able to meet growing consumer demand through improved manufacturing, distribution and marketing practices. Its corporate and managerial structure, supported by new methods of manufacturing, aided this process. The two dominant trends of the period between 1890 and 1914 - consolidation of firms into larger units as they modernised and the growth of volume production - required improved company management and capital. No British companies in the period before 1914 or even during the 1920s and 1930s fully embraced this managerial phase.



## Chapter 6. Retailing to a mass-market

***'the present is the age of the "amateur", not only in photography but in everything else' (1892)<sup>1</sup>***

British retailing underwent major changes during the nineteenth century. James Jefferys, the retail historian, outlined the four principal ways that finished consumer goods were purchased during the first half of the nineteenth century.<sup>2</sup> These were from retail units such as grocers, from manufacturers who also retailed their own goods, from markets and from itinerant tradesmen. This general pattern had remained largely unchanged from the previous century.<sup>3</sup> There was a transition from a model of small, independent shops owned and run by the shopkeeper selling local produce or craftsmen-retailers making and selling more specialised goods from their own premises, to one of specialist retailing.

### *Economic and social changes*

The nineteenth century was a period of significant economic and social change, particularly during the second half of the century as the wider industrial revolution was consolidated after a period of rapid growth. Photography was able to benefit from the earlier changes that had left growing numbers of individuals in a position to make use of their greater wealth and leisure time.

Economically, all social classes in Britain had greater disposable wealth by the end of

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<sup>1</sup> From *The Times* newspaper quoted in 'Amateurs', *Photographic Review of Reviews*, no. 1, vol. 1, January 1892, p. 30.

<sup>2</sup> James B. Jefferys, *Retail trading in Britain 1850-1950*, Cambridge: Cambridge University Press, 1954.

<sup>3</sup> Dorothy Davis, *A history of shopping*, London: Routledge & Kegan Paul Ltd, 1966, p. 252.

the century than they had in 1850. For the middle-classes, such as the bankers, lawyers, merchants and industrialists and shopkeepers, which had represented eighteen per cent of the labour force or 1.25 million people in 1851, their income had risen from £60 per annum to £160 per annum on average by 1911.<sup>4</sup> Although the cost of living had increased, wages had kept pace and by the end of the century as prices fell so the cost of living declined. The estimated number of income tax payers that equated to those earning over £160 per annum and those earning just under at £100-150, was 440,000 in 1860. It had risen to 620,000 in 1880 and reached 1.9 million by 1913. These people represented only part of a much larger market for photography.<sup>5</sup>

More significantly the working classes had also seen significant improvements in their income. This had been helped by a general improvement in workers' skills resulting from the growth of occupations that required machinery to be operated. These were better paid occupations. Between 1790 and 1900 the real earnings of the average worker increased by 2½ times and probably doubled between 1830 and 1900. The economic historian John Burnett noted that 'there can be little doubt that the worker had gained as much as – perhaps more than – other classes during the period of late Victorian prosperity'.<sup>6</sup>

For all social groups, but especially the middle and lower classes, there was a steady increase not just in real incomes but, more importantly, in the disposable income available to these groups as the century progressed. Some of this would end up supporting leisure interests and activities, including the simple recording by photography of visits and outings that now formed part of this leisure time.

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<sup>4</sup> John Burnett, *A history of the cost of living*, Aldershot: Gregg Revivals, 1993, pp. 231-232.

<sup>5</sup> J. C. Stamp, *British incomes and property*, London: P. S. King & Son Ltd, 1916, quoted in W. Hamish Fraser, *The coming of the mass market, 1850-1914*, London: MacMillan Press Ltd, 1981, p. 23.

<sup>6</sup> John Burnett, *A history of the cost of living*, Aldershot: Gregg Revivals, 1993, pp. 257. On an indexed basis A. R. Pest has shown that income per head rose from 69.8 in 1870 to 115.2 in 1914 (1900=100), see A. R. Prest, 'National income of the United Kingdom 1870-1946', *The Economic Journal. The Journal of the Royal Economic Society*, v. 58, no. 229, March 1948, pp. 31-62, in particular table II 'National Income of United Kingdom at Factor Cost, 1870-1946'.

Changing social aspirations acted as a stimulus for new forms of entertainment and a demand to both enjoy and to make use of newly available leisure time in a constructive manner. The growth of photographic clubs and societies from the 1880s was just one manifestation of this as individuals sought to channel their free time into something other than just entertainment. Public libraries and organisations such as the Workers' Educational Association gave the opportunity to put this desire for personal improvement into something tangible. This move was aided by socially progressive legislation that extended education more generally to the working classes.

Demographic changes during this period were no less important than the economic ones in terms of their influence on photography. Britain's population had grown from twenty-seven million in 1851 to forty-five million by 1911. This change affected the demand for goods and services. At one level there were simply more people, with more money to spend. They were concentrated in towns and cities, which supported a demand for visits to the sea and countryside. As family units became smaller during the nineteenth century this had the benefit of improving general living conditions and creating an increase in spending power. Regarding the middle-classes, 'their expectations of what was a fitting standard for their social class increased', which was realised through the better use of leisure time and self-improvement, which photography as a hobby could be part of.<sup>7</sup>

Employers were required to provide paid holidays and the working week was limited which further increased the time for leisure. From the 1860s working men were generally required to work on weekdays and Saturday mornings instead of six full days a week. For salaried employees, holidays with pay were becoming the norm. Time away from work was seen as increasingly important by social reformers, which was secured with the 1871 Bank Holiday Act. This designated four public holidays in England, Wales and Ireland, in addition to Good Friday and Christmas Day, which were

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<sup>7</sup> J. A. Banks, *Prosperity and parenthood: a study of family planning among the Victorian middle classes*, London: Routledge and Kegan Paul, 1954, quoted in W. Hamish Fraser, *The coming of the mass market, 1850-1914*, London: MacMillan Press Ltd, 1981, pp. 12-13.

generally accepted as holidays, and Scotland enjoyed five public holidays. By the 1890s these existed alongside a widely-adopted holiday season for the factory worker. Factory Acts from 1844 set limits on the number of hours that an individual could work during a day and by 1890 some trades were restricted to eight hours, although there were local variations and the legislation was susceptible to abuse.

In Britain there were much improved transport links, notably the extension of the railway network from 10,000 miles of track in 1850 to 35,000 miles by 1901. As early as 1851 railway companies offered concessionary fares and reduced entry prices to the Great Exhibition, which attracted three-quarters of a million people from the north of England to view its exhibits. This extension of the network was accompanied by the introduction of excursion tickets at reduced prices that encouraged those in the cities to travel to the coast and to make visits that, hitherto, would have been difficult and expensive. Travel by train opened up a wider world to many people whose forebears a generation before had rarely travelled more than twenty miles from their birthplace. Those that travelled in the 1890s increasingly wanted to record their journeys and, through simpler photography, they now had the means to do so.

The abolition of a tax on advertisements in 1853, newspaper stamp duty in 1855 and paper duty in 1861 precipitated a massive growth in magazines and periodicals. In the general press, photography was just one of a wide range of subjects that were written about for a general audience. The number of titles within the specialist photographic press, mainly targeted at the amateur, grew from the later 1880s.

The economic historian W. Hamish Fraser has identified three ways in which the demand for goods within a mass market can increase. This can be through an increase in numbers, through an increase in spending power; or through a change in fashion and taste.<sup>8</sup> For photography, the changing economic and social situation created the conditions to fulfil all three. Of these, the third was underpinned by changes in

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<sup>8</sup> W. Hamish Fraser, *The coming of the mass market, 1850-1914*, London: MacMillan Press Ltd, 1981, p. 3.

photographic technology and retailing that acted as a catalyst on demand for photographic equipment. Retailing was not simply driving these internal changes, it was responding to wider changes in society.

Throughout the nineteenth century there was a significant rise in the standard of living and a general increase in disposable income. During the second half the number of consumers roughly doubled and they became increasingly concentrated in urban areas. For the first time a strong working-class demand emerged that was large, stable and, from a commercial perspective, worth satisfying. This helped impel retail premises to make the change to specialist retailing. Concurrent with changes in the supply of goods for the working classes, there was a growing middle-class, and a rise in the number of white-collar workers: salaried and professional men with money to spend that was not simply required for necessities. Their demand was instrumental in effecting the establishment of department stores offering a range of goods under one roof. For the lower-middle and working-classes co-operative stores offered benefits through lower prices or a dividend to customers. Profit was returned to the business or customers and not to an owner or shareholders. There was a growth of multiple stores of which Boots, the chemist, is one of many examples. For the consumer these stores offered a familiar shopping environment with each branches each stocking a consistent range of goods at similar prices.

Along with the physical changes to shop premises and their content there were structural changes to retailing. The growing populations residing in cities and towns created denser markets, and manufacturers took advantage of this. For makers of complex or expensive goods there were advantages to be had in maintaining a close relationship with consumers, but the need to service more concentrated markets and the growth in mass-production from the 1850s forced producers to confront new ways of distributing their products. For many a wholesale network – either independent or owned by the producer – provided a means of doing this. Frequently this was coupled with a sales force to generate orders from retailers. The performance by a single manufacturing business of a wide range of functions from sourcing raw materials,

turning them into finished goods, wholesaling and retailing, which is termed vertical integration by economists, was typical of young and declining industries. As industries achieved maturity many of these functions were taken over by other firms. The larger markets allowed them to specialise and generate greater profits.<sup>9</sup>

The growth of photographic wholesalers has been alluded to in Chapters 3 and 4 but the way goods were sold required new methods of distribution and supply. At the start of the nineteenth century goods that were not made on, or close to the premises at which they were being sold, were distributed through a 'network of sedentary merchants'. These were generally larger shopkeepers in a position to supply smaller shopkeepers. Throughout the nineteenth century producers moved to replace merchants in the wholesale distribution of manufactured goods in an effort to keep costs down. This was done by either supplying goods directly to all retailers or by the use of wholesalers. This shift was negated where independent wholesalers were able to merchandise goods effectively and in such cases producers continued to rely on independent middlemen until the end of the century.<sup>10</sup>

Retailers needed regular supplies and in greater volumes than their predecessors had. Wholesaling developed to supply goods to specialist retailers that had no manufacturing capability on behalf of manufacturers that no longer had any retailing function. The largest manufacturers sometimes retained a retail business through mail order and delivery functions to keep customers in Britain and the Empire supplied, and supported this through the issuing of comprehensive catalogues of the goods that they sold. For department stores such as Harrods these were extensive, showing almost everything needed for the home.

In summary, there were three general trends in retailing generally throughout the

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<sup>9</sup> George J. Stigler, 'The division of labour is limited by the extent of the market', *Journal of Political Economy*, 59 (1951), pp. 185-93.

<sup>10</sup> Glen Porter and Harold C. Livesay, *Merchants and manufacturers. Studies in the changing structure of nineteenth-century marketing*, Baltimore and London: The John Hopkins Press, 1971, p. 2.

nineteenth century. There was a decrease in the relative importance of the producer/retailer as the use of factory production and mass-production techniques took over. Initially producers were selling directly to the retailer but by the end of the period the importance of the wholesaler as an intermediary between the manufacturer and retailer had increased. Although these trends are a simplification and there was significant variation between different market sectors they provide a useful starting point for a discussion of how the photographic industry changed its methods of retailing in response to changing consumer demand.<sup>11</sup>

### *Changing markets*

The main market for photography in the period up to the 1880s was concentrated with the professional portrait studio. Amateur demand for photographic equipment and materials in this period was seasonal and limited in its extent. From the mid-1870s, and more particularly from the mid-1880s, there was a marked reversal of this pattern. By 1900 the amateur market for photography had overtaken the professional for the first time; it established a dominant position that remains unchallenged to the present day. There were a number of reasons for this. The market for professional portrait photography had become saturated with studios and there was little growth in this sector. Despite repeated attempts, none of the new ideas to boost consumer demand for portraits, such as novel photograph formats, had proved sufficiently appealing to encourage the public to make a return visit to a studio. It was the amateur, or hobbyist market, and principally the snapshotter market that grew significantly and most dramatically. As noted earlier, changing social and economic circumstances and new technology that made photography easier to operate supported this shift. A growing retail infrastructure that made photographic goods readily available helped this new mass market.

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<sup>11</sup> James B. Jefferys, *Retail trading in Britain 1850-1950*, Cambridge: Cambridge University Press, 1954, pp. 9-13.

## Photographic retailing

In 1896 'Pharmacian' described his very personal view of the photographic retailer:

We find tinkers, tailors, ironmongers, haberdashers, furniture brokers, Jacks-of-all-trades, limited liability riggers, *et hoc genus omne*, cheerfully innocent of chemistry, optics, mechanics, and all other collateral sciences, and with a smattering of photography, "going into" the photographic trade on the celebrated "sell-the-goods" principle, as exemplified in the Law Courts, announcing themselves as photographic dealers, and clamouring for the privileges of the chemist without paying the fees, passing the examination, or proving their efficiency in any way whatever.<sup>12</sup>

He depicted a new style of retailing that had developed in response to a growing demand for photographic goods and materials, and reflected the wider changes in retailing that Jefferys was to note. Although the specialist photographic dealer was still important 'Pharmacian' was mocking the ingress of those others who could sell but did not have the specialist knowledge to support the photographer. During the 1890s photographic retailing underwent a transformation: general dealers, department stores and chemists had begun encroaching on what had largely been the preserve of a small number of specialist retailers. These had evolved from the early 1850s servicing both professional and amateur photographers. The growth of the snapshotter, who had less interest in the technical side of photography, and the simplification of photography itself had encouraged new types of retailers to service their needs. They sold photographic equipment and sensitised materials alongside new services such as developing and printing.

Between 1839 and the early 1870s there had been three types of photographic retailer. Firstly, there was the manufacturer that retailed cameras and photographic equipment or sensitised materials directly from the manufactory, generally occupying the same premises. Secondly, there was the retailer that had a business dealing in or making scientific or optical instruments and offered photographic equipment and goods

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<sup>12</sup> Pharmacian, 'The poisons excitement', *British Journal of Photography*, no. 1899, vol. 43, 25 September 1896, p. 622.



alongside these. Thirdly, there was, from the early 1850s, the specialist photographic retailer that sold photographic equipment, chemicals and sensitised materials as the principal part of the business. By 1914 the first of these had largely disappeared. The second remained but their numbers had declined significantly. The third, the specialist photographic retailer, had evolved into a more modern business that introduced new techniques of selling. From the 1890s the last of these groups had been joined by a fourth group - the pharmaceutical chemists and department stores which handled photography as part of a wider consumer goods business and responded to a growing market which they, too, could service.

In 1892 the *Photographic Review of Reviews*, in a special trade-only issue, published its description of a photographic dealer:

A dealer in photographic materials is a man who invests capital, pays rent, employs assistants, and perhaps issues elaborate catalogues, and keeps an expensive staff of commercial travellers and clerks with the object of introducing to photographers the various requisites of their business or hobby<sup>13</sup>

This, for the first time, described the specialist photographic retailer which had existed from the 1880s. It was a more considered view compared with that of 'Pharmacist' a few years later. Simpler ways of making photographs for both the serious amateur and the snapshotter had created a demand for photography that had encouraged new retail outlets to come into being to service their needs. In Britain a wider retailing revolution had been underway from the middle of the nineteenth century as noted earlier of which the growth in the size of shops and the variety of their stock; and the increasing number of multiple-branch firms, were the most relevant for photography.<sup>14</sup>

Photographic retailing for a mass market was able to take advantage of these wider trends without needing to displace a large pre-existing retail sector. The number of retailers was limited and those that did not adapt were simply overtaken by new

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<sup>13</sup> 'For the trade only', *Photographic Review of Reviews*, no. 1, vol. 1, January 1892, pp. 8-9.

<sup>14</sup> W. Hamish Fraser, *The coming of the mass market, 1850-1914*, London: MacMillan Press Ltd, 1981, p. 94.

entrants.<sup>15</sup> Before the 1880s photographic retailing had largely been conducted by manufacturers and there had been few specialist retailers. Those that came into being to supply the amateur photographer and snapshotter markets from the later 1880s could take advantage of this with new ways of retailing. The growth in the overall number of specialist retailers was significant (see Figure 18 on page 298). The size and content of photographic retail premises changed significantly. In addition, the entry of non-specialist photographic retailers selling photography such as chemists, department stores and stationers was a major factor in making photographic goods available to a wider public. In the wider retail environment new trends such as the co-operative model of retailing and the entry of large manufacturers into retailing through multiple branches, were recognised by the photographic industry, and adapted to its specific requirements.

#### *Inside the photographic shop*

The appearance of photographic retail premises and the presentation of goods within it underwent significant changes during the 1880s and 1890s. Compared with the 1840s and 1860s, when manufacturers generally retailed their own products, there was now an increasing separation between photographic manufacturing and retailing (see Illustration 36). Accompanying this was the growth of specialist retailers that had a need for their premises to be a space for the active selling of goods. Throughout the period up to 1914 specialist retailers began to improve the retail environment for customers. The most successful presented goods in attractive displays inside the shop and started to use the shop window as a means of attracting customers. Until this point it had been more for admitting light into the premises than a marketing opportunity.

By 1900 the internal shop appearance, the presentation of goods and the role of the sales person had begun to assume an importance they had hitherto not had. For the amateur and snapshotter the ability to see a range of equipment and to discuss their requirements with a knowledgeable shop assistant helped instil a confidence concerning their

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<sup>15</sup> For the retailing of photographic portraits and for the photographic studio all three criteria are applicable.

purchase. For the retailer an investment of time with the customer ensured that he would return for fresh supplies of film or plates, and the snapshotter would make use of their services for developing and printing.

The Kodak company was especially active in the area of retail design bringing in American ideas and employing a rising Glaswegian designer - George Walton - to decorate their offices and retail premises.<sup>16</sup> Walton had designed the exhibition and hanging of the Linked Ring photographic movement's Photographic Salon exhibition of 1897. This innovative work had renewed his contact with George Davison, the assistant manager of the Eastman Photographic Materials Company. Davison employed Walton to design the company's 1897 exhibition which opened shortly after the Salon. The success of both these exhibitions led to further commissions from Davison, leading to Walton designing the company's new headquarters in London's Clerkenwell Road, followed by Kodak's flagship Regent Street retail premises (see Illustrations 37 and 38). Work on Kodak's other premises in Britain, Europe and Russia followed. Walton's style was distinctive and in keeping with the style of the times attracted the name 'Kodakoration', reflecting the close association between him and the Kodak company.<sup>17</sup> He also worked for several other photographic manufacturers - notably Wellington and Ward, and Elliott and Sons - designing exhibition stands and printed materials.

Walton's styling and furniture was only one aspect of the interior design of Kodak's premises. More generally goods were made visible by being displayed in glass cabinets and not kept hidden away behind a counter or on a shelf. Shop assistants were encouraged to be photographers themselves and were therefore experienced to offer advice on the practical aspects of photography. Many retail premises, both specialist photographic shops and chemists that sold photographic goods, sought to attract customers by offering facilities for the amateur. One of the most common was the

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<sup>16</sup> Karen Moon, *George Walton designer and architect*, Oxford: White Cockade Publishing, 1993, pp. 71-82. Moon provides a detailed account of Walton's work for Kodak in Britain and Europe.

<sup>17</sup> Quoted in Karen Moon, *George Walton designer and architect*, Oxford: White Cockade Publishing, 1993, p. 76. Walton also designed printed materials for the company including the cover of their 1903 *Kodak Price List*, an amateur photographic goods catalogue, see Illustration 49.

provision of a dark room to develop and change plates. This service was usually free and was intended to bring in amateurs and boost sales of plates and films. Better customer service was a route to increased sales that crossed boundaries between the professional, amateur and snapshotter. Photography with its background in chemistry was susceptible to these changes, particularly with the latter two groups.

#### *The co-operative model of retailing*

The first commercially successful co-operative enterprise founded in 1844 had built on previous movements, and all of these were directed towards the working class.<sup>18</sup> By the mid-1860s there were a number of imitators being established by aspirant middle-class groups anxious to benefit from the commercial success of such an enterprise. They were not overtly political in their origin and owed their inception more to their subscribers who wanted to minimise their expenditure and to benefit from any profit.<sup>19</sup> A number of these general co-operative businesses began to retail photographic goods as part of their business and there was at least one company formed purely for the purpose of retailing photographic goods.

As early as 1867 William H. Harrison proposed combining photographic societies and establishing co-operative firms to obtain discounts, but the suggestion came to nothing.<sup>20</sup> The one firm that was specifically formed as a photographic co-operative was The Photographic Artists' Co-operative Supply Association Limited. It was formally established in 1877 to take over an existing businesses run by Herbert Kerr and Edward Mason working under the names of Chambers and Company and the Uranium Dry Plate

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<sup>18</sup> The Rochdale Society of Equitable Pioneers, founded in 1844, is usually considered the first successful co-operative enterprise, and built on similar organisations from the mid-eighteenth century. Within ten years there were over one thousand co-operative societies in the United Kingdom.

<sup>19</sup> The main middle class co-operatives were the Civil Service Supply Association was established in 1865, the Civil Service Co-operative Supply Society Ltd (1866), the Army and Navy Co-Operative Society Ltd (1872), and Civil Service [Co-Operative] Supply Association, Limited (1879). See: <http://www.victorianlondon.org/dickens/dickens-cus.htm> (accessed 16 April 2009).

<sup>20</sup> William H. Harrison, 'A fund for the advancement of photography', *British Journal of Photography*, no. 389, vol. 14, 18 October 1867, pp. 496-497.

Company at 251 Goswell Road, London.<sup>21</sup> The objectives of the company were outlined in its memorandum of association:

To carry on, upon co-operative principles, the trade or business of Manufacturers of and Dealers in all apparatus, articles and appliances used in Photography, and to perform such operations as may be required by Photographers and others, and to do all things incidental or auxiliary to Photography

The share capital was set at £50,000 and Kerr was retained as the first managing director on a salary of £600 per year, which was later reduced to £400 after the appointment of an assistant manager. There were opposing views on the role of the co-operative. On one hand the publication of the prospectus attracted a negative comment from a dealer who criticised the business arrangements and directors' salaries. The company quickly refuted these, noting that the directors would receive no remuneration until five per cent had been paid on the paid-up capital of the Association and then only when voted upon by the shareholders. On the other hand another correspondent, an amateur photographer, supported the setting up of the company which he declared 'a boon to myself and others' noting that the 'merits of co-operation and joint-stock enterprise are well known'.<sup>22</sup>

The rationale for establishing the company was explained by Kerr in 1879:

The PACSA neither pretend nor profess to be any other than working traders, except so far as regards their working on the co-operative system. This system was adopted by reason of the heavy discounts (varying from 15 to 50 and 60 per cent.) which were offered to the promoters of the Association on the prices of most photographic goods previously to the opening of their stores, and also by reasoning of the co-operative system appearing to the minds of the promoters to

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<sup>21</sup> The National Archives, Kew, BT31 2311/11183. Photographic Artists' Co-operative Supply Association Limited. The company's registered office was moved to 43 Charterhouse Square, London in September 1878 where it was to remain until the company's eventual demise in 1894. The company prospectus was published as a supplement in the *British Journal of Photography*, no. 906 vol. 24, 7 September 1877.

<sup>22</sup> 'The Photographic Artists' Co-operative Supply Association Limited', *British Journal of Photography*, no. 907, vol. 24, 21 September 1877, pp. 454-455.

be the one most fair to both buyer and seller.<sup>23</sup>

The company aimed to return to shareholders five per cent on their investment and then, after provision for contingencies, to return all profits to ticket holders whose purchases exceeded £20 in one year. Tickets were available at five shillings each and there were other benefits available such as free delivery of purchases within a four mile radius from Charing Cross. By 1881, 1171 shares had been taken up and the shareholders included photographers in Nottingham, Cambridge, Rhyl, Colchester, Surbiton, Armagh, Wick and Henley-on-Thames. Well known names within photography such as the photographer Alfred Goater, F. W. Lyon Playfair, Joseph Paget and George Washington Wilson along with other photographic dealers and the photographic camera maker Charles G. Collins of St John's Wood also subscribed.<sup>24</sup> In July 1881 Kerr, in an explanation of the company's business, stated that 'outcries against co-operation (never able to stand the test of reason or reflection) have naturally abated since the Public has learned by experience to appreciate its advantages' and he announced that there were upwards of three hundred ticket members.<sup>25</sup>

The financial reality of the company was rather different. During first two years the company had shown a trading loss, although 1881 was expected to show a profit of £2000 on a turnover of £20,000.<sup>26</sup> In fact there was a total loss of £3968 over three years to 31 December 1881. By February 1883 the company claimed to be earning profits of '£50 or £60 per week, with a total business of £20,000 a year, and doing the

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<sup>23</sup> 'Photographic Artists' Supply Association', *Photographic News*, no. 1092, vol. 23, 8 August 1879, p. 385.

<sup>24</sup> The inclusion of so many photographers amongst the shareholders is not surprising, As large users of materials the low prices and dividend on their purchases would have potentially been worthwhile. Collins was making the firm's retail photographic equipment. Paget was an amateur photographer who in 1878 offered a prize for the best dry plate process described in Chapter 4.

<sup>25</sup> 'The Photo. Artists' Co-operative Supply Association, Ltd', *British Journal of Photography*, no. 1108, vol. 28, 29 July 1881, supplement.

<sup>26</sup> 'Photographic Artists' Supply Association', *British Journal of Photography*, no. 1168, vol. 29, 22 September 1882, p. 547. This was the start of a court case between Arthur Loringe and Herbert Kerr with the former alleging he was defrauded of £2070 which Kerr was using to support the company and to pay off his own debts. The case was not proven.

second largest business of the kind in London'.<sup>27</sup> An on-going dispute between Kerr and Arthur Loringe, the assistant managing director, led to the company being wound up in 1883. The trading name was quickly taken over by a new company, with Kerr as director. It operated from the same address but it moved away from the co-operative principles of its predecessor.<sup>28</sup>

The co-operative model of doing business was, in theory, beneficial for the consumer of photography with lower prices and profit-sharing. The reality showed that the market, even in London, was barely large enough to sustain such a business in the face of increasing competition from other retail outlets. The negative publicity and court case surrounding the Photographic Artists' Co-Operative Supply Association had not helped. The underlying problem was that it was unable to secure sufficient customers to negotiate large enough discounts from manufacturers so that it could make its prices attractive.

There were several smaller photographic retailers established under the co-operative principle, such as The British Photographers' Co-operative Stores Limited in 1890, which never formally commenced business and may, in fact, have used the 'co-operative' phrase as a marketing ploy rather than to operate under its principles.<sup>29</sup> Photography, it seems, was too small to support a viable co-operative business. Only the largest co-operative department stores such as the Civil Service Supply Association were able to stock photographic goods and only then as part of a larger business. It operated successfully for many years with members receiving their promised benefits. Conventional department stores such as Whiteley's, in London's Bayswater, were large

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<sup>27</sup> 'In re The Photographic Artists' Supply Association', *British Journal of Photography*, no. 1190, vol. 30, 23 February 1883, p. 109.

<sup>28</sup> The National Archives, Kew, BT31 3332/19790. Photographic Artists' Co-Operative Supply Association, Limited. The new company lasted until 1891 when it was sold to W. B. Whittingham and Company Limited. Whittingham was on the original shareholders list of 1884 described as a printer and publisher. He published the *Photographic Art Journal*.

<sup>29</sup> The National Archives, Kew, BT 31/4853/32202. The British Photographers' Co-operative Stores Ltd. This was reported: 'A New Co-Operative Society', *British Journal of Photography*, no. 1580, vol 37, 15 August 1890, p. 523. The firm was formed as photographic dealers with the sole agency for ten years of the Waterloo dry plate. The company never commenced business and was dissolved in 1893.

enough to secure discounts from manufacturers to make their retail prices attractive to the consumer and to provide a return for shareholders.

*The growth of non-specialist retailers*

By the time that the amateur and snapshotter demands for photography had begun to grow in the 1870s and 1880s the department store was a well-established fixture on the shopping streets in several of Britain's larger towns and cities. They had grown from their origins in the 1830s with most of the early stores coming from drapers' shops. By the 1880s a number had expanded beyond this to include household and consumer goods. These retailers quickly added photography to the range of goods being sold under one roof. In London, Whiteley's, which opened in 1863, was one of the largest, and advertised itself as 'the universal provider'. By 1890 it was employing over 6000 staff. The firm added photography to its business in 1886.<sup>30</sup> A. W. Gamage, which was established in 1878, opened its photographic department in 1899 and soon afterwards began issuing a separate catalogue for mail order customers.<sup>31</sup> Another London department store, Benetfink and Company which had been established since 1844, was, by the 1890s, offering a range of photographic goods and products including its own branded cameras and equipment. Recognising the importance of photography, it had also joined the Photographic Trade Association by 1903 (see Illustration 39). Harrods in Knightsbridge similarly offered a wide range of photographic goods.

The department stores were not simply retailers; they also maintained an active relationship with manufacturers and customers. Manufacturers recognised the large numbers of customers such stores attracted and frequently held demonstrations of new goods. The Adhesive Dry Mounting Company Ltd noted in 1912: 'demonstrations of dry-mounting, for the benefit of the amateur worker, are being given by the Adhesive Company at the depots of Messrs. Kodak and in the photographic departments of large

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<sup>30</sup> *British Journal of Photography*, no. 1358, vol. 33, 14 May 1886, p. 302.

<sup>31</sup> 'Trade', *The Photogram*, no. 67, vol. 6, July 1899, p. 222.



stores, such as Harrod's, Whiteley's, Selfridge's, and the Army and Navy, etc'.<sup>32</sup>

The department stores generally stocked a wide range of products from different manufacturers that appealed to different types of customer, from the serious amateur photographer, the hobbyist and, most importantly, the snapshotter. Because of the volume of goods that they could sell, the department stores were able to negotiate preferential terms with the largest manufacturers and it is telling that Kodak did not attempt to enforce the exclusive stocking clause that prevented the stocking of competitors' products it insisted on with smaller retailers. It did, however, enforce minimum selling prices and took action against stores that cut prices. Gamages, for example, was taken to court in 1901 by Kodak for selling goods below their list price.<sup>33</sup> Kodak's reluctance to pressurise these stores was probably the result of £7750 worth of sales by Kodak to London dealers in 1911. Of this 29 per cent or £2270 was to three large retailers: Army and Navy, Boots and Harrods and a further 9 per cent was handled by two specialist photographic retailers.<sup>34</sup>

The department stores were not the only non-specialist photographic retailers. Chemists, discussed in detail later in this chapter, were very significant, as was the entry of multiple-branch stationers into the retail market for sensitised goods. The growth of travel by all social classes and the ability of photographic sensitised goods to be stored for longer without deteriorating meant that they could be offered more widely. In 1896 the *British Journal of Photography* reported that 'in future, packages of dry plates will be obtainable at the railway bookstalls of Messrs. W. H. Smith & Sons. Doubtless, many amateur photographers and others will much appreciate this convenience'.<sup>35</sup> This

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<sup>32</sup> 'Catalogues and trade notices', *British Journal of Photography*, no. 2733, vol. 59, 20 September 1912, p. 735.

<sup>33</sup> 'Kodak versus Gamage', *British Journal of Photography*, no. 2135, vol. 48, 5 April 1901, p. 222. Kodak obtained a court order restraining A. W. Gamage Ltd from committing breaches of its conditions of sale i.e. undercutting list prices in 1899.

<sup>34</sup> These were Westminster Photographic Exchange Ltd and City, Sale & Exchange. Figures taken from *Kodak Sold*, an unpublished manuscript held at the National Media Museum, Bradford.

<sup>35</sup> 'News and notes', *British Journal of Photography*, no. 1882, vol. 43, 29 May 1896, p. 348.

was a significant development as W. H. Smith had outlets at nearly every railway station and this made sensitised materials readily available to every amateur photographer and snapshotter. By 1914 coin-operated film dispensing machines were being installed at beach resorts and on major thoroughfares. They were usually mounted on walls outside photographic dealers, in an attempt to reach snapshotters passing by outside of opening hours.

### *The chemist as retailer*<sup>36</sup>

Chemists and druggists were established in the modern sense from 1852 with the passing of the Pharmacy Act, which required the registration of pharmaceutical chemists.<sup>37</sup> A subsequent Act of 1868 set up qualifying examinations by the Pharmaceutical Society of Great Britain and for the compilation of a register of chemists and druggists.<sup>38</sup> By 1905 they totalled 15,000 and legislation such as the Poison Act had given chemists an important role as suppliers of chemicals. This set them up in competition with 'photographic chemists', a term that had no legal definition but generally equated to photographic retailers, which were prevented from selling a small number of proscribed chemicals required for photography. By the 1890s a number of multiple chemists' chains had been established including Boots of Nottingham and Taylor's Drug Company of Leeds.<sup>39</sup> Both these companies entered photographic retailing during the decade.

The mid-1890s had seen a growing demand for photographic equipment and materials from amateur photographers and snapshotters and their supply was increasingly seen as attractive by other businesses. Chemists could see a profitable and complimentary

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<sup>36</sup> The term 'chemist' is used here as a retail pharmaceutical chemist dealing with drugs, medicines and medicinal products. They were usually described as chemists or druggists.

<sup>37</sup> Pharmacy Act 1852, 15 & 16 Vict, c56.

<sup>38</sup> Pharmacy Act 1868, 31 & 32 Vict, c121.

<sup>39</sup> Quoted in T. A. B. Corley, 'The British pharmaceutical industry since 1851'. [www.rdg.ac.uk/econ/econ/workingpapers/emdp404.pdf](http://www.rdg.ac.uk/econ/econ/workingpapers/emdp404.pdf) (accessed 12 September 2008). Taylors would subsequently be taken over by Boots.

sideline to their own business and one writer stated that photographers and chemists were the trades best suited to starting such a business.<sup>40</sup> Photographic retailers viewed the entry of chemists and druggists into photographic retailing with concern. 'Nemo' writing to the *British Journal of Photography* in 1894 noted with sarcasm: 'I am glad to see one of the wholesale drug houses has started a photographic department, and no doubt others will follow, and, of course, this will draw off the trade of chemists from the stationers, who have appropriated our business'.<sup>41</sup> Just a month after Nemo's letter was published the same journal recorded that the chemist and druggist, J. and J. Thompson and Company Ltd, of Manchester, had 'added a photographic department to [its] business, and hold a large varied stock of plates, papers, mounts, sundries, &c., at most reasonable prices'.<sup>42</sup>

The entry of chemists into photographic retailing had its origins in the 1840s where photography's use of chemicals had a natural synergy with their existing business. Their role gradually moved away from their origins as suppliers of chemicals moving into pharmaceutical and consumer products. Two issues were of particular concern to established photographic retailers: price-cutting and the role of the Pharmaceutical Society in prosecuting photographic retailers for selling prohibited chemicals. The Poisons Act required only a registered chemist or druggist to sell specified chemicals and even then under certain conditions. 'Cosmos' summed the matter up stating:

It is not a little singular that, after having half ruined the photographic-dealing trade by mercilessly cutting prices all round, the chemists heap insult on injury by neglecting no opportunity of persecuting the dealer with that model of inequity, the Poisons Act, the schedule of which is a disgrace to the legislature<sup>43</sup>

He compounded his criticism by describing the Pharmaceutical Society, which saw itself as a professional body, as a 'trade union'.

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<sup>40</sup> 'How to start a photo-material business', *The Photogram*, no. 53, vol. 5, May 1898, pp. 150-152.

<sup>41</sup> 'A call to arms' correspondence from Nemo in *British Journal of Photography*, no. 1785, vol. 41, 20 July 1894, p. 463. 'Nemo' may have been referring to Boots the Chemist.

<sup>42</sup> 'News and notes', *British Journal of Photography*, no. 1788, vol. 41, 10 August 1894, p. 506.

<sup>43</sup> Cosmos, 'Jottings', *British Journal of Photography*, no. 1894, vol. 43, 21 August 1896, pp. 533-534.

The issue of the Pharmaceutical Society in prosecuting dealers for selling chemicals in breach of the Poisons Act was a minor one for the majority of photographic dealers. It was mainly professional photographers that made use of restricted chemicals, with the far larger group of amateur photographers rarely needing such chemicals by the late 1890s.<sup>44</sup> That said, photographic dealers were regularly prosecuted by the Society for illegally selling chemicals. A small number of established retailers and commentators resented the intrusion of chemists on to what had traditionally been photographic territory. For the majority of amateurs and the general public the situation was different. These new outlets made photography increasingly accessible by presenting new places to buy sensitised materials and chemicals, as well as equipment and services, such as developing and printing.

Photographic manufacturers and wholesalers had few qualms about this new trend which expanded the overall market for their goods and actively marketed their products to chemists. The 1896 Chemists' Exhibition, which was promoted by the journal *British and Colonial Druggist*, drew photographic exhibitors such as the wholesalers Barclay and Sons, J. Sanger and Sons, and Burroughs, Wellcome and Company. The last firm, which had its main business in the pharmaceutical industry, exhibited its Tabloid range of chemicals used in photography.<sup>45</sup>

Writing in 1899 'A Chemist' discussed the pros and cons of chemists selling photographic goods and concluded that the chemist was not best disposed to selling them. He argued that chemists had a need to make a large profit on sales, they had a general attitude more suited to selling goods where they retained a monopoly, and they had the inability, due to long working hours, of not being able to devote time to 'social intercourse' with photographers. Conversely, he also noted that if younger chemists

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<sup>44</sup> 'The Pharmaceutical Society' correspondence from D.D., *British Journal of Photography*, no. 1863, vol. 43, 17 January 1896, p. 47.

<sup>45</sup> 'The Chemists' Exhibition', *British Journal of Photography* no. 1896, vol. 43, 4 September 1896, p. 573.

'take up photographic dealing upon modern lines...then they could undoubtedly make a good thing of it both for themselves and their customers'. He concluded that 'the chemist will go on improving as a dealer in things photographic'.<sup>46</sup> Despite these challenges photography was increasingly seen by retail chemists as a new revenue stream as other areas of their business declined as a result of stiffer competition.

The chemists were generally enthusiastic about photography and the opportunities that it offered. The *Pharmaceutical Journal* published a photographic supplement in 1898 which was designed to 'cause many chemists who are not already dealers in photographic materials to consider whether they ought not to at once commence the stocking of photographic goods'.<sup>47</sup> In the same year the *Chemist and Druggist* claimed that 'at least two thirds of the photographic trade is already in the hands of chemists'. The photographic press was more ambivalent to their involvement. The *British Journal of Photography* in 1898 was dismissive of chemists:

If it had said that chemists divided with the toy and similar shops a large proportion of the trade in the commonest forms of apparatus – three-and-sixpenny and five-shilling cameras, "guinea sets," and the like - it would be nearer the truth. Who but a schoolboy or the veriest tyro, would think of going to the druggist for photographic apparatus of material? Practical workers prefer to deal with those who understand something about the goods they sell.<sup>48</sup>

The journal's assertion that chemists were dealing with the lower end of the trade, the casual amateur and snapshotters, was probably correct. By the late 1890s this represented a significant part of the wider photographic business. Simple box-form and amateur cameras together with sales of plates and roll film formed the greater part of the total photographic market and represented an area that was expanding rapidly. Although it is hard to quantify the level of business being done at this level, R. and J. Beck claimed to have supplied more than a million films in 1897 for their Frena camera

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<sup>46</sup> A Chemist, 'The chemist as photographic dealer', *British Journal of Photography*, no. 2028, vol. 48, 17 March 1899, p. 171.

<sup>47</sup> 'Prints', *The Photogram*, no. 53, vol. 5, May 1898, p. 157.

<sup>48</sup> 'The projected Poisons Act', *British Journal of Photography*, no. 1979, vol. 45, 8 April 1898, pp. 211-212.

which was aimed at the basic amateur photographer or snapshotter.<sup>49</sup>

Chemists were not simply selling photographic materials; they were increasingly supporting the amateur and snapshotter in the same way that specialist photographic retailers had traditionally done. They were dispensing advice, performing simple operations such as loading film in to a camera, and providing a developing and printing service. In 1902 the *British Journal of Photography* reported that 'thousands of chemists and druggists throughout Britain have a photographic department, and as a feeder thereto many of them have installed a dark-room, where the ubiquitous amateur can change or develope [sic] his plates'.<sup>50</sup> The journal now recognised that a proportion of these amateurs would eventually end up taking their hobby more seriously and it was therefore prepared to support the involvement of the chemist in photographic retailing.

The Photographic Trade Association was realistic about the situation and by its second annual general meeting in 1903 Boots Cash Chemists had been accepted as a member.<sup>51</sup> The first Boots shop selling herbal remedies had opened in Nottingham in 1849 and under the management of Jesse Boot, the son of the founder, who took full control from 1877, the business began to grow substantially. The company became the Boots Pure Drug Company Limited in 1888 and from ten stores in 1890 the business had expanded to 300 stores by 1905 and 560 throughout Britain by 1914. By the end of 1893 the company was the largest of the company-chemist chains and it began to add new retail areas to the core pharmaceutical business.<sup>52</sup>

Photography was a natural fit. It brought customers to its shops but, more importantly, Boots' existing customers, mainly from the lower and middle classes, were precisely the

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<sup>49</sup> Advertisement, *The Photogram*, no. 52, vol. 5, April 1898, p. iii.

<sup>50</sup> 'Pharmacists and photography', *British Journal of Photography*, no. 2201, vol. 49, 11 July 1902, p. 544.

<sup>51</sup> 'Photographic Trade Association', *British Journal of Photography*, no. 2245, vol. 50, 15 May 1903, pp. 386-387.

<sup>52</sup> Stanley D. Chapman, *Jesse Boot of Boots the Chemists: a study in business history*, London: Hodder and Stoughton, 1974.

emerging mass market for photography. The company issued an annual photographic catalogue from the early 1900s which showed products from the major manufacturers including Kodak, Houghton and Butcher (see Illustration 40). It also offered its own range of '20<sup>th</sup> century' branded cameras, plates and roll films made for it by the 20<sup>th</sup> Century Photographic Company Limited.<sup>53</sup> It specifically targeted the snapshotter and by 1905 it was offering a developing and printing service. This was done both as a mail order service via its catalogues and through the shops. Jesse Boot writing in 1905 stated:

owing to recent improvements in our plant, and the installation of the newest and most up-to-date appliances, we are now in a position to deal expeditiously with all printing, developing, and enlarging orders entrusted to us, and we feel sure that a trial order will result in your continued patronage and recommendation.<sup>54</sup>

By 1900 photography was making up around sixteen per cent of the total income of all independent chemists, a figure which remained fairly consistent until just after the Second World War after which it declined significantly.<sup>55</sup> While there were undoubtedly chemists that sold photography simply to increase turnover and with no understanding of the subject, many chemists were also amateur photographers in their own right and, being independent chemists, they could offer developing and printing services which they frequently undertook themselves.

By 1914 the antipathy towards the chemists from the established photographic trade that had existed in the early 1900s had largely been dispelled. Manufacturers recognised the important role that they played as retailers of their products. The trade more generally accepted that Boots was now a significant part of photographic retailing and it was

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<sup>53</sup> The National Archives, Kew, BT 31/16720/71633. The 20<sup>th</sup> Century Photographic Company Limited.

<sup>54</sup> *Price List of Photographic Department*, Nottingham: Boots Cash Chemist, n.d. [c1905], p. 2.

<sup>55</sup> Stuart Anderson and Virginia Berridge, 'The role of the community pharmacist in health and welfare, 1911-1986' in Joanna Bornat, Robert Perks, Paul Thompson, Jan Walmsley, *Oral history, health and welfare* London: Routledge, 2000, pp. 48-74. Figure 2.1 shows the relative income derived by community pharmacists from dispensing prescriptions, proprietary medicines, toiletries/cosmetics, photographic, non-proprietary medicines, dentistry/optics and other sources between 1900 and 1995.

admitted to photographic trade shows.<sup>56</sup> Although chemists represented competition, in a rapidly expanding market, existing specialised photographic retailers were better placed to cater to the growing numbers of hobbyists and camera club members leaving the chemists to service the new amateur and snapshotter.

#### *The photographic wholesaler*

A changing relationship between photographic manufacturers and retailers from the 1880s began to set out a more clearly defined role for the photographic wholesaler. The wholesaling of photographic goods, or the selling of quantities of goods to be retailed by a third party, by an intermediary company was not new and the term had been widely used from the 1850s. Then it was used in a loose way to represent stores that handled quantities of different types of goods and the 'wholesaler' might be a retailer or a manufacturer willing to supply others with small quantities of goods for subsequent resale. From the 1880s the term was increasingly used in the modern sense of the word to mean a company acting between a manufacturer and retailer distributing goods for sale. The function was gradually being removed from manufacturers. The *British Journal of Photography* was able to write in 1894 that 'the photographic dealer or middleman is an indispensable factor in photographic trade. He stands, and of necessity must stand, between the producer and the consumer'.<sup>57</sup>

In the period before the 1890s manufacturers with retail premises would describe their premises as 'wholesale photographic premises' and issue a 'wholesale price list' but this reflected their ability to sell large quantities of their products from their own premises.<sup>58</sup>

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<sup>56</sup> 'Photographic arts and crafts exhibition', *British Journal of Photography*, no. 2713, vol. 59, 3 May 1912, pp. 343-348. This was organised by Mr Arthur C. Brookes and was 'an exhibition of apparatus and materials of immense interest, not only to the professional photographer, but to the amateur worker and to the dealer in camera requisites'. It included Boots, the chemist.

<sup>57</sup> Cosmos, 'Jottings', *British Journal of Photography*, no. 1791, vol. 41, 31 August 1894, p. 551.

<sup>58</sup> The two terms used are a representative example taken from Harvey and Reynolds, Operative Chemists, 13 Briggate, Leeds, advertisement in the *British Journal of Photography*, no. 109, vol. 7, 1 January 1860, p. xi. By 1868, the successor company, Harvey, Reynolds and Company in their new premises at 14, Commercial Street, Leeds, noted a wholesale entrance in Change Alley, which went into the same building.



For other manufacturers without retail premises, the term implied the willingness to directly supply retailers. Those retailing would describe themselves as a 'wholesale photographic dealer', which indicated the size of their business, and an ability to supply others with large quantities of goods.<sup>59</sup> As an example, the London retailer Jabez Hughes opened his 'photographic warehouse' in 1859 on London's Oxford Street. The business was run by John Werge from 1861 and was large enough to supply other retailers. Joseph Solomon and Jonathan Fallowfield both adopted this model supplying other retailers from their own retail premises. J. T. Chapman in Manchester, J. J. Atkinson in Liverpool and George Mason and Company in Glasgow all operated in a similar way supplying other firms in their locality. By 1880 the Mason business was the leading wholesaler north of the border with England, a position it retained until the late 1890s.<sup>60</sup>

Mawson and Swan of Newcastle, which manufactured chemicals and photographic plates, set up a wholesale depot in London in 1883, which it hoped 'will prove of greater convenience to our customers and materially facilitate business'. It appears to have been little more than a retail outlet but carrying enough stock to be able to supply other dealers.<sup>61</sup> By the early 1880s with the increase in photographic retailers it is clear that some manufacturers, irrespective of whether they had retail premises, were conducting a wholesale distribution business from their factory. This model seemed to suit most manufacturers giving them greater control over retailers and the pricing of their products.

By the 1890s a small number of wholesalers in the modern sense of the word were established. Reporting on the Chemists' Exhibition in 1896 the *British Journal of Photography* noted: 'several of the wholesale firms, like Barclay & Sons, J. Sanger &

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<sup>59</sup> When J. McCrossan and Co., 63 & 65, Stockwell Street, Glasgow, put its business up for sale it described it as a 'wholesale photographic business' and as 'wholesale dealers in photographic goods...at present in good working order, doing the best cash trade in Scotland, and capable of further extension.' *Photographic Notes* no. 104, vol. 5, 1 August 1860, n.p.

<sup>60</sup> 'Brief biographies. George Mason', *The Photogram*, no. 18, vol. 2, June 1895, p. 141.

<sup>61</sup> Advertisement, *British Journal of Photography*, no. 1255, vol. 31 23 May 1884, p. xi.

Sons, also showed cameras, plates, and papers'.<sup>62</sup> Although Barclay and Sons had a retail outlet they were also supplying equipment and materials from a variety of manufacturers to smaller retailers and acting as a middleman between manufacturers and a retailers. A confidential supplementary price list to their 1904 catalogue noted discounts for dealers ranging between 2½ per cent to 50 per cent. There were further discounts of up to 33⅓ per cent for large orders.<sup>63</sup> Larger firms such as W. Butcher and Sons opened wholesaling departments which, in Butcher's case, was Camera House situated in the City of London (see Illustration 41). The building provided a large ground-floor show room in which every article stocked by the company was available for inspection by the dealer. The basement was used for packing, the first floor as general offices and the higher floors were used as stockrooms. A 1902 report noted that 'the various departments are connected throughout by telephone, hand- and passenger-lift, and the whole establishment is indeed a hive of industry like unto very few in the photographic trade'.<sup>64</sup> Retail orders continued to be handled by the firm's Blackheath branch.

The largest manufacturers distributed their products in three ways. They would directly supply their products to retailers; they would sell to consumers either directly from their own retail premises, factory or by mail order; and wholesalers would handle sales as a middleman. This model was well established by 1900 although there was a growing emphasis on the use of wholesalers and supplying retailers directly.

Kodak succeeded in dramatically changing the way their own goods were distributed in 1902 by removing all intermediate wholesalers from the distribution chain and handling orders themselves. It had retail premises throughout the United Kingdom, making it well placed to handle sales and their distribution. Kodak took the decision to wholesale

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<sup>62</sup> 'The Chemists' Exhibition', *British Journal of Photography*, no. 1896, vol. 43, 4 September 1896, p. 573.

<sup>63</sup> Barclay and Sons Ltd., *Supplement to photographic price list issued 1904. Dealers' discount code and special price list*, London: Barclay and Sons Ltd, 1904.

<sup>64</sup> 'Camera House', *The Photogram*, no. 102, vol. 9, June 1902, pp. 191, 192.

its products directly to retailers in order that it could better control retail prices and limit price-cutting which was a major problem for many companies. More controversially it could use new contracts to limit the goods that were being offered on the same premises from competitors.<sup>65</sup> A report noted that 'two or three large photographic houses and several firms of wholesale chemists and druggists' were adversely affected by Kodak's move. Houghton was one of these and claimed that it had often been buying over £1000 worth of goods each month from Kodak.<sup>66</sup> The move particularly affected the retail side of the photographic industry with many chemists and photographic retailers opting to deal with Kodak products and which, under the new contract, reduced the number of outlets for competitors' products. For many retailers Kodak's products were too popular and too widely advertised for them not to be stocked.

Opposition was vocal but only had a limited impact. Mindful that there was opposition to the move, Kodak bought a firm of wholesale distributors operating in Newcastle, Birmingham and Dublin, called Hurman Limited, to wholesale theirs and other manufacturers' products. This was done under the Hurman name, thus distancing it from those who refused to deal directly with Kodak. The net effect of Kodak's move was to establish two principal wholesale networks throughout Britain. Kodak was one and the other was operated by Houghton, which acted as an umbrella for other manufacturers and smaller wholesalers unable or unwilling to deal with Kodak. Some manufacturers refused to supply their goods to Kodak. By 1913 Kodak's own retail sales amounted to a significant 34 percent or £108,493 compared to 66 per cent or £204,601 worth of sales to dealers. This represented a significant amount of business.<sup>67</sup>

Although there was an increasing separation between photographic manufacturers and

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<sup>65</sup> 'The Kodak company and the wholesale dealers', *British Journal of Photography*, no. 2176, vol. 49, 17 January 1902, p. 41.

<sup>66</sup> 'Kodak, Limited, and the wholesale dealers', *British Journal of Photography*, no. 2176, vol. 49, 17 January 1902, p. 59.

<sup>67</sup> *Kodak Sold*, unpublished manuscript held at the National Media Museum, Bradford. These percentages are broadly static across different products. The only other year for which figures are available is 1911 when the split was 35 per cent and 65 per cent respectively.

the consumer, most continued to sell directly to consumers and actively solicited orders. For some firms, such as the lens manufacturers Dallmeyer, Ross and Taylor-Hobson, this meant having retail premises in London. For some of the camera and sensitised goods manufacturers this required customers dealing directly with the firm, usually by mail order. Other firms encouraged purchases to be made via a network of agents details of which were noted in their trade catalogues and advertising.

For wholesalers this arrangement was not wholly satisfactory with the consumer able to by-pass retailers. A system of preferential sale terms for retailers and wholesalers and fixed retail prices ensured that the consumer rarely enjoyed any preferential purchase price by dealing directly with the manufacturer. The only real benefit was the delivery of purchases directly to their door by mail. The exception was for the professional photographer who maintained a trade account with Kodak or Ilford which might ensure discounts once spending over the course of a year had reached certain thresholds. The principal photographic wholesalers, Houghton, Butcher and Fallowfield, all had retail premises in their own right and the wholesale chemist distributors such as Evans, Lescher and Webb, Sangers and May Roberts, who all wholesaled Kodak and other manufacturers' goods, were also manufactures and retailers.<sup>68</sup>

The direct selling to consumers and retailers, and the entry of Kodak into wholesaling other manufacturers' goods limited the growth of a strong and distinct wholesale sector, although its absence had no adverse effect on the retail photographic trade. A more standardised approach to wholesaling did not finally evolve in Britain until the 1950s.

## Marketing

Marketing as a distinct discipline emerged in the late nineteenth century. The term was

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<sup>68</sup> This list of wholesalers is noted in E. E. Blake *Reminiscences of Kodak Ltd*, unpublished manuscript, 1959, pp. 6-7, a copy of which is held at the National Media Museum, Bradford.

used in a modern sense in America from 1884, spreading to Britain and Europe soon afterwards.<sup>69</sup> Marketing during the early part of photography's existence was largely represented by advertising, but by the 1890s this had extended considerably as other activities were introduced and adopted. These included the use of special promotions and offers to attract customers, the use of trade names and trade marks to build up brand loyalty, as well as less obvious forms of marketing such as competitions to encourage photographers to use particular plates and films. These techniques were being used widely outside of photography and were quickly adopted by photographic manufacturers and retailers anxious to promote their goods. The larger photographic manufacturers were enterprising in the range and scale of their marketing activities to attract amateur photographers and, as far as such activities can be measured, they achieved considerable success.

#### *New markets and the snapshotter*

The distinction between the amateur and professional photographer was reasonably well defined by the 1890s, although there were some issues over amateurs charging for prints which occasionally clouded the matter. The difference between the two types of amateur photographer was more difficult to determine. The photographic press rarely did so despite there being a difference between those for whom photography was a leisure pursuit and those for whom photography was simply a means of producing photographs as a record of people and places. For the former the production of the photographic print was usually part of their practice. Membership of a camera club was frequently part of this so that prints could be exhibited or critiqued with fellow enthusiasts.

Those amateurs that simply pressed the button and allowed others to make their prints were 'snapshotters' and the possession of a camera was simply a means to an end. By

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<sup>69</sup> Marketing as a noun was first used in *Harper's Magazine* in 1884. The term is defined as 'the action or business of bringing or sending a product or commodity to market; (now chiefly, *Business*) the action, business, or process of promoting and selling a product, etc., including market research, advertising, and distribution.'

the 1890s the need for a technical knowledge of photography was no longer a requirement to make photographs. All the equipment, materials and services required for producing a photograph were available for purchase: from the plates or film to the developing of these and the production of photographic prints. The snapshot and snapshooter had their origins with the gun. The former term had been used by John Herschel in 1860 where he employed it to refer to the securing of a photograph within one tenth of a second.<sup>70</sup> By the mid-1890s the term snapshot generally referred to photographs taken quickly with a hand camera. The established photographic periodicals still referred to 'amateurs' as taking snapshot photographs when it was increasingly the case that these were being taken by amateurs with little interest in photography other than in producing successful photographs for personal pleasure. It is more appropriate to apply the term snapshotter to this class of amateur to distinguish him, and increasingly her, from the amateur making photographs as part of a more formal hobby.<sup>71</sup>

The combination of simpler and cheaper cameras and more sensitive photographic materials had given the amateur a certain amount of confidence in the results achievable. The rise of a mass amateur market for photography from the later 1880s presented retailers and manufacturers with an opportunity not just to target the entire market as had hitherto generally been the case, but to concentrate their efforts on particular sub groups. Children and women especially were seen as a new market for snapshot photography.

Manufacturers had occasionally targeted these groups in the early years of photography.

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<sup>70</sup> The *Oxford English Dictionary* records the terms snap-shot as both a noun and verb and snap-shooter. Other than the Herschel reference which it sources to *Photographic News* on 11 May 1860, subsequent photographic uses date from 1890 with the earliest appearing in American publications.

<sup>71</sup> Research by the author has added to the etymology and provided new evidence for the dating of the words 'snap-shot' and 'snapshotting' given in the *Oxford English Dictionary* (OED online, second edition, 1989). The former word was used in the *British Journal of Photography* in 1892 to describe photographs and the *Photographic News* in 1893 to describe both photographs and a camera. The latter word was used in the *British Journal of Photography* in 1897 in the context of the Queen's diamond jubilee celebrations, where Slater used the term 'snapshotter' to describe himself and defines himself as an everyday photographer.

In 1855 Abraham and Company of Liverpool had launched a photographic outfit containing a camera, lens, chemicals and instructions. It claimed in advertising that it was suitable for a youth.<sup>72</sup> This was an isolated instance and there was no wider effort to appeal to children. The significance of these markets grew with the simplification of photography. By the later 1880s and 1890s all the major camera manufacturers were issuing sets of apparatus specifically aimed at children. Manuals and 'how to do it' books were also aimed at the same audience. For children who could gather twelve or more friends, usually within a school, youth organisation or church context, Kodak would send a demonstrator whose task was to 'give instruction and explanation of the processes used in photography from start to finish...in so simple a way as to enable his hearers to start out with a camera right away and bring back successful pictures'.<sup>73</sup> The popular illustrated children's press regularly featured photography as a hobby and gave instructions for making simple shadow pictures and photographs.

From the 1850s there had always been a considerable number of female photographers. Some were running commercial portrait studios and others were serious amateurs exhibiting their work. In addition women were widely employed in studios and in manufacturing. In 1881 the *British Journal of Photography* was bemoaning the fact that women had yet to make use of gelatine dry plates in any number:

The favour with which photography was once received by the fairer portion of the community – many lady amateurs having attained considerable skill in manipulation – seems slowly and gradually to have cooled for reasons more probably than any connected with soiled fingers. So far they do not seem to have taken up gelatine with any degree of ardour, though there is no doubt that they will do sooner or later; for with ferrous oxalate almost perfect cleanliness of fingers and dress may be secured.<sup>74</sup>

Despite this slow start the introduction of dry plates did act as an incentive for women to take up photography more widely. The widespread adoption of dry plates throughout the 1880s, their improved reliability and their impact on camera size were all factors

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<sup>72</sup> Advertisement, *British Journal of Photography*, no. 2, vol. 2, 10 February 1855, n.p.

<sup>73</sup> 'News and Notes', *British Journal of Photography*, no. 2308, vol. 51, 29 July 1904, p. 676.

<sup>74</sup> *British Journal of Photography*, no. 1102, vol. 28, 17 June 17 1881, p. 3

supporting this. In 1886, five years after the *British Journal of Photography* had commented on the absence of women using dry plates, it was able to note their greater interest in photography:

Very frequently the amateur photographer is accompanied by one of the fair sex, who apparently renders assistance, and takes as much interest in the selection of the view and the exposure of the negative as he does. We have on several occasions noticed a couple of heads together under the somewhat large focussing cloth of a small camera. It is scarcely surprising that under some circumstances photography, as a pastime, is preferred by many to lawn-tennis and similar amusements.<sup>75</sup>

By the 1890s women amateurs were seen by manufacturers as a significant and distinct group of photographic consumers in their own right (see Illustration 42). Recognising this, *London Photographic Chat*, a journal for amateur photographers, launched a ladies page, edited by a woman, in its July 1901 issue.<sup>76</sup> Camera and sensitised goods makers recognised the importance of the female amateur and saw the potential of the female snapshotter. More importantly, they also realised the role that the woman had in influencing male buyers of photography and women began to feature extensively in advertisements.

Ever mindful of the emerging mass-amateur market George Eastman planned his advertising for the new Kodak camera deliberately to ensure that women and children were featured in it. In 1889 an Eastman employee, Kitty Kramer, became the model for the proto-Kodak Girl.<sup>77</sup> As an idealised female figure she was intended to embody the ease and simplicity of photography and, of course, to sell Kodak products. In Britain Kodak advertisements from 1888 featured women photographers and by 1895 these were appearing widely in the popular illustrated press including *The Graphic* and *Illustrated London News*. In 1910 Kodak commissioned the artist John Hassell to design a new series of advertisements featuring the Kodak girl. He based his design on a

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<sup>75</sup> *British Journal of Photography*, no. 1361 vol. 33, 4 June 4 1886, p. 352.

<sup>76</sup> 'Ladies' Page: For Male Readers also', *London Photographic Chat*, no. 5, vol. 1, July 1901, pp. 12-13.

<sup>77</sup> An extensive review of Kodak's advertising is presented in Nancy Martha West, *Kodak and the lens of nostalgia*, Charlottesville: University Press of Virginia, 2000.



photograph by Cavendish Morton of his wife Mary Logan and the first full-page newspaper advertisement ran in the *Daily Mail* on 22 April 1910. The Kodak Girl 'was to become the personification of snapshot photography' and remained so until the 1970s as she kept pace with changing fashions and styles (see Illustration 43).<sup>78</sup> From the point of view of photographic manufacturers she acted as a subconscious advertisement for women to take up photography through her position as a role model. Twenty years later a similar exercise was undertaken with the Brownie camera, this time pitched at children.

#### *The photographic periodical press*

Changes in printing technology and the move to lithographic printing with its ability to reproduce half-tone advertisements underpinned the changes to advertising that took place from the 1880s. Increasingly advertisements began to include illustrations of products and company logos although, even in 1903, most of them in the *British Journal Photographic Almanac*, a comprehensive British annual, still relied heavily on line drawings to illustrate production goods.

The wording in advertisements was the principal means of attracting buyers and this became more powerful from the 1880s as advertisers increasingly sought a greater share of the mass amateur market. This was not a wholly new development. In 1859 the *Photographic Journal* noted that Lloyd Chapman, the British agent for Derogy lenses, 'in his advertisement, does not quote quite fairly...it is therefore to be regretted that any exaggerated statement should be made about them, a proceeding sure to bring them into discredit'.<sup>79</sup> From the 1880s, in keeping with wider practice of the late nineteenth century, the language used by the photographic trade in advertisements, became more exaggerated and optimistic.

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<sup>78</sup> Colin Harding, 'The Kodak Girl', *Photographica World*, no.78, September 1996, pp. 9-15.

<sup>79</sup> 'T. Parkhouse', *The Photographic Journal*, no. 101, vol. 6, 1 September 1859, p. 220. This journal was the predecessor of the *British Journal of Photography* and not the Photographic Society's journal.

The number of places in which advertisements appeared expanded. This reflected the growth of the periodical press generally, particularly the popular illustrated press from the 1890s. Alongside this, the specialist photographic press in Britain grew from just four journals all of which included advertising in 1860 to over fifteen titles by 1898.<sup>80</sup> These were supplemented by smaller circulation publications linked to individual photographic societies a number of which took advertising, usually from local suppliers. Circulations also increased. Thomas Sutton's journal *Photographic Notes* had a circulation of 1100 around 1860.<sup>81</sup> The *British Journal of Photography*'s circulation rose from 2000 copies of its first number to 4000 by March 1854 and by the end of the century it was in excess of 20,000 copies weekly.<sup>82</sup> The *Journal's* annual *Almanac* printed 15,000 copies in 1886 which had increased to 25,000 in 1903, remaining at this level until 1913.<sup>83</sup>

New photographic publications joined the two largest circulation titles. The *Amateur Photographer* appeared weekly from 1884 and was aimed squarely at the serious amateur. *Photography*, *Practical Photography* and the *Camera* were all focused on the amateur while *The Photogram* was aimed at the working photographer, both amateur and professional, and the wider trade. The last of these appeared in January 1894 with a print run of 9000 which by the end of the year had increased to 12,500, although by 1896 an editorial complained that circulation was sticking at just below 11,000.<sup>84</sup> Unusually the editor and permanent staff were compensated through shares in the publication which meant, as the introductory editorial noted, 'no profit, no pay'. Five

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<sup>80</sup> *Willing's British and Irish Press Guide 1898*, London: James Willing, Junr. Ltd, 1898. p. 149. Willing's lists fifteen titles including two photographic society journals, all of which were taking paid advertising and were sufficiently large enough to be included in the publication. The journals in 1860 were: the *British Journal of Photography*, *Photographic News*, *Photographic Notes* and the *Journal of the Photographic Society*.

<sup>81</sup> *Photographic Notes*, no. 129, vol. 6, 15 August 1861, pp. 234-235.

<sup>82</sup> These early figures were reported in *British Journal of Photography*, no. 3, vol. 1, 11 March 1854, p. 40.

<sup>83</sup> *British Journal of Photography*, no. 1376, vol. 33, 17 September 1886, p. x; *British Journal of Photography*, no. 2732, vol. 59, 12 September 1912, p. 702.

<sup>84</sup> *The Photogram*, no. 12, vol. 1, December 1894, p. xxiv; no. 29 vol. 3, May 1896, p. 128.

hundred readers were also invited to taken a small financial interest in the magazine.<sup>85</sup> Other smaller magazines appeared and a few also ceased publication.

As Table 12 shows there was a rise in the number of photographic periodicals being launched from the mid-1880s with the majority being aimed at amateurs (see Illustration 44) Each journal took advertising and as a result advertisements were being seen by increasing numbers of consumers. The readership of each periodical varied which meant that manufacturers could target particular groups with some manufacturers placing the majority of their advertising with selected titles. J. Lancaster and Son, which primarily produced amateur equipment, devoted most of its advertising to the amateur titles except for special issues of the more trade orientated titles. Some manufacturers and retailers advertised widely across different titles to maintain their profile. But in reality the market differentiation between most of the titles was too slight to be significant. Readers' preferences were more likely being determined by the contributors and general style of the editorial content.

Table 12. The principal photographic journals highlighting their main markets.

Journal title	Date launched	Target readership
British Journal of Photography	1854	Professional and Amateur
Photographic Notes	1856	Amateur
<i>Photographic News</i>	1859	Professional and Amateur
Amateur Photographer	1884	Amateur
Camera	1886	Amateur
Photographic Record	1887	Amateur and professional
Photography	1888	Amateur
Photographic Answers	1889	Amateur
Practical Photographer	1890	Amateur
The Photogram	1894	Trade, Professional and Amateur
Junior Photographer	1894	Amateur
The Photographic Dealer	1896	Trade
The Photographic Review	1896	Amateur

<sup>85</sup> *The Photogram*, no. 1, vol. 1, January 1894, p. 1.

The photographic press was sustained through the cover price of each journal and through advertising from photographic manufacturers and retailers. The fragmentation of the amateur market across different titles was a new phenomenon that occurred from the mid-1880s. Advertising across titles was required as manufacturers attempted to maintain their relative market positions by attracting sales from each magazine's readership, although it was only the same largest manufacturers that were able to maintain this, others were more selective in which titles they used.

The introduction of *The Photographic Dealer* in 1896 was particularly noteworthy. It was the first publication solely aimed at supporting the photographic trade both for manufacturers and retailers. It deliberately did not include photographers – commercial or amateur - amongst its target audience and specifically excluded the latter group from its readership.<sup>86</sup> The first issue set out its aims:

In planning these pages our central idea has been to produce a periodical which shall not only keep the dealer fully posted up in the latest items of news connected with his trade, but which shall supply practical and helpful information calculated to enable him to improve his position on the ladder.<sup>87</sup>

The editorial coverage included general business topics, news from manufacturers, news for dealers, summaries of patents and trade marks, and business news relating to the trade. It also carried extensive advertisement pages which were aimed at trade buyers. *The Photographic Dealer* signifies the arrival of a strong manufacturing and retailing trade able to support its own journal. The expansion of the photographic press, in both their number and circulation, mirrored the expansion of the photographic trade which, in turn, was following the growth of mass amateur photography.

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<sup>86</sup> *The Photographic Dealer* was launched in 1896 and publication ceased in 1939. No complete run of the publication has been located. The British Library newspaper library only holds 1906-1939. The National Media Museum in Bradford holds a small number of individual issues dating from 1896 and there are a small number of issues held in two private collections. The New York Public Library has a short run dating from 1904.

<sup>87</sup> *The Photographic Dealer & Optical & Scientific Apparatus Trades Journal*, , no. 1, vol 1, June 1896, p. 1.

*Other publications: books and house magazines*

Further evidence of the growing size of the market for photography derives from the publication of manuals and books on photography. These were increasingly aimed at the amateur photographer from the 1890s. The Kernel's *Photography in a nutshell* first appeared around 1890 and went through various reprints and revisions so that by the time the 1899 edition appeared 33,000 copies had been printed and by 1905 it had reached 68,000.<sup>88</sup> Elliott and Sons' *The Barnet book of photography* was a practical book on photography that sold over 25,000 copies between its first publication in May 1898 and the fourth edition in August 1900.<sup>89</sup> Even more impressive was Ilford's *Manual of photography* which was aimed at both amateurs and professional photographers. It first appeared in 1891 in an edition of 1000 and by 1912 225,000 copies had been printed.<sup>90</sup>

The need to develop an on-going relationship with consumers of photography, irrespective of their professional or amateur status, became more pressing from the 1880s as more retailers and manufacturers entered the market. Advertising was a useful tool and the increasing circulations of the photographic periodical press had extended its reach. A growing number of manufacturers and retailers saw the need to develop a more direct relationship with their customers. This was done by issuing a regular magazine or newsletter through which information about new products could be given in a way that was less overt than advertising. Reviews of new products were run alongside general advice and tips. The publications were mainly aimed at the amateur and concentrated on how to get the best from a camera and giving advice on dark room techniques.

One of the first companies to take advantage of this method of marketing was the Britannia Works Company, later Ilford Limited, which introduced *Photographic Scraps* in September 1889. The publication was available free of charge from dealers or on

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<sup>88</sup> *British Journal of Photography*, no. 2058, vol. 46, 13 October 1899, p. 652. The Kernel was the pseudonym of General Philip Henry Hawkes.

<sup>89</sup> *British Journal of Photography*, no. 2103, vol. 47, 24 August 1900, p. 540.

<sup>90</sup> C. H. Bothamley, *The Ilford manual of photography*, Ilford: Ilford Limited, n.d. [c1912].

subscription for the cost of postage. It appeared monthly. Dealers were able to print their own name on the publication in an area of the cover deliberately left blank for the purpose. The initial print run of 15,000 was quickly exhausted and by 1912 40,000 copies were regularly being distributed.<sup>91</sup> The content was aimed at the amateur and explained how to use its products. It also gave practical information and advice contributed by some of the well-known photographic journalists of the day. Although the company was keen to emphasise that *Photographic Scraps* was not a trade circular a special issue was sent to every professional photographer internationally in 1896, 'written by professionals for professionals'.<sup>92</sup>

Elliott and Sons' *The Photographer's Record* appeared from 1892, initially monthly, before it became more infrequent and the last issue was published in November 1904.<sup>93</sup> The first issue outlined the content and aims of the new journal:

Our object, then, in producing this paper is to provide in a condensed form a record of photographic progress from month to month, a digest of the doings of the photographic societies, the pith of the current photographic literature (both home and foreign), and, as far as possible, to give a review of all improvements in photographic processes and apparatus, and to give hints on manipulation which we trust will be useful alike to the older hands and the newest recruits, both professional and amateur.<sup>94</sup>

Houghtons began issuing their *Houghtons Quarterly* from 1906. It was intended for amateur photographers with the aim of describing and picturing 'the latest novelties in photographic apparatus and materials'.<sup>95</sup> It was only the largest manufacturers who issued house magazines or newsletters. For small retailers, most of which only had one retail outlet, issuing such magazines offered little benefit. For those with an extensive mail order business, and a wider customer base than the house magazine offered greater

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<sup>91</sup> Advertisement, *British Journal of Photography*, no. 1532, vol. 36, 13 September 1889, p. iv.

<sup>92</sup> 'Ex Cathedra', *British Journal of Photography*, no. 1893, vol. 43, 14 August 1896, p. 513.

<sup>93</sup> *The Photographer's Record* [initially called *The Photographer*], Barnet: Elliott and Son. British Library classmark: PP7612.kd.

<sup>94</sup> 'Introductory', *The Photographer's Record*, no. 1, vol. 1, September 1892, p. 1.

<sup>95</sup> *British Journal of Photography*, no. 2414, vol. 53, 10 August 1906, p. 635.

commercial advantage. The magazine maintained contact between the business and its customers; it could act as a catalyst for new purchases and it generated wider publicity. Jonathan Fallowfield, a major retailer and wholesaler, published and distributed a quarterly *Photographic Remembrance* by 1890. This was mainly a catalogue for 'which Mr Fallowfield is either the manufacturer, the seller, the importer, or for which he is agent' but also included additional text.<sup>96</sup> It was soon joined by monthly supplements and these publications were in addition to the firm's extensive annual catalogue of goods. These two publications were joined in 1904 by *Fallowfield's Courier* which appeared monthly for the benefit of photographic dealers.<sup>97</sup> At the same time J. Lizars' Liverpool branch launched its own magazine which was issued monthly in the interests of both the amateur and professional photographer.<sup>98</sup> Kodak did not issue a publication for amateurs before 1914 but concentrated on its *Photographic Trade Circular*, the first issue of which was published in October 1899, and was aimed at photographic retailers and photographers.

The Glasgow retailer and wholesaler George Mason and Company began publishing its monthly *The Photographer* from 1880. It included editorial comment, reports from photographic societies, articles giving advice on practical photography, and extracts from the paid-for photographic press. It also included small advertisements.<sup>99</sup> Unusually, as most publications were issued free, Masons made it available on subscription for three shillings. It appears to have been considered a rival to the regular photographic press by the company, despite the fact that much of its content had already appeared elsewhere. The London retailer James A. Sinclair and Co. Ltd launched a house magazine in 1911.<sup>100</sup> Although the firm only had one retail outlet in London's

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<sup>96</sup> 'Fallowfield's photographic remembrance', *British Journal of Photography*, no. 1556, vol. 37, 28 February 1890, p. 138. This publication appears to have been more a hybrid between a house magazine and a trade catalogue. No copies have been located.

<sup>97</sup> *British Journal of Photography*, no. 2294, vol. 51, 22 April 1904, p. 343.

<sup>98</sup> 'Lizars magazine', *British Journal of Photography*, no. 2346, vol. 52, 21 April 1905, p. 311.

<sup>99</sup> *The Photographer*, Glasgow: George Mason and Company. The publication appeared between 1880 and 1902.

<sup>100</sup> 'News and notes', *British Journal of Photography*, no. 2647, vol. 58, 20 January 1911, p. 52.

Whitehall it did an extensive provincial and overseas trade. The *Sinclair Sign-Post*, subtitled 'a monthly note book of apparatus and processes', was sent free of charge to the firm's customers. It offered a wide range of articles on different aspects of photography as well as customer testimonials to Sinclair's own goods.

*Publications: the trade catalogue*

The trade catalogue had been one of the principal forms of marketing since the early 1840s and its early influence has been discussed in Chapter 3. From the 1880s the number of catalogues issued, their content, size and importance grew dramatically. The reasons for this are linked to a number of factors that came together at about the same time. Printing technology had evolved since the 1850s and 1860s which meant that large runs of illustrated catalogues could be produced more cheaply than previously. The adopting mass-production manufacturing techniques required more catalogues to be distributed, which, with the growth in the number of photographic retailers, supported larger print runs and at a smaller unit cost. From the 1890s the entry in to the photographic market of department stores and chemists such as Boots, for which a photographic department was part of a much larger enterprise, meant that the catalogue was one of many different subjects being issued. The cost could be borne by the head office which also had the experience to produce them efficiently.

Up to this period catalogues had usually been issued annually or less frequently, generally at the beginning of the year or in response to a change of ownership or change of address. From the 1880s a more clearly defined photographic season associated with amateur photography, usually extending from May to September, came into being. As a result general photographic catalogues tended to be issued from around March and appeared throughout the season. The *British Journal of Photography* noted in 1886 catalogues from Rouch and Fallowfield in March and the following year Sands & Hunter advertised that a 'New Season's Catalogue. Will be published on Monday April



4<sup>th</sup>.<sup>101</sup> Some of the largest retailers such as Fallowfield, with a trade and amateur market, continued to issue a catalogue earlier in the year. Its 1888 catalogue was published on 20 February and it started issuing a monthly list of novelties from 1 January 1888.<sup>102</sup> William Tylar of Birmingham advertised his 1889 catalogue on 11 January as a: 'new year's gift...containing numerous practical hints, and all my latest novelties', which was available from the following week.<sup>103</sup>

The size and content of catalogues also changed. Up to the early 1880s, with the exception of some of the largest firms such as Negretti and Zambra which had interests extending beyond photography to scientific instruments, most trade catalogues rarely exceeded fifty or sixty pages.<sup>104</sup> By the later 1880s Mawson and Swan's catalogue of 1887 was being described as 'ponderous' at 132 pages and Jonathan Fallowfield's of 1889 was noted as: 'comprehensive' at 335 pages. There was clearly more to add each year as the 1892-3 edition had increased to 600 pages, then 700 pages in 1893, and 1040 pages in 1904.<sup>105</sup>

Other manufacturers were rarely so extravagant with catalogues up to 200 pages being more common. The exceptions were large firms which combined manufacturing, retailing and wholesaling and which had a market that included amateurs, the trade and commercial photographers. Examples are George Houghton whose catalogue reached 891 pages, Kodak's at 900 pages and W. Butcher at over 500 pages, all in 1904.<sup>106</sup> Houghton's catalogue continued to climb steadily to 1086 pages and W. Butcher and

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<sup>101</sup> *British Journal of Photography*, no. 1349, vol. 33, 12 March 1886, p. 66; vol. 34, no. 1403, 25 March 1887, p. xii.

<sup>102</sup> *Advertisement, British Journal of Photography*, 1443, vol. 34, no. 30 December 1887, p. x.

<sup>103</sup> *Advertisement, British Journal of Photography*, no. 1497, vol. 36, 11 January 1889, p. ii.

<sup>104</sup> Negretti and Zambra's 1879 catalogue ran to 600 pages but included meteorological and mathematical instruments as well as photographic goods. The *British Journal of Photography*, no. 985, vol. 26, 21 March 1879, p. 141, thought their photographic offerings 'old-fashioned' stating 'It is not to be supposed that a firm so general in their tastes can compete upon even terms with others who make a speciality of one particular branch of business'.

<sup>105</sup> *British Journal of Photography*, no. 1413, vol. 34, 3 June 1887, p. 348; no. 1513, vol. 36, 3 May 1889, p. 304.

<sup>106</sup> These pages counts are taken from contemporary reports in the *British Journal of Photography*.

Sons Ltd's to 1361 pages by 1914.<sup>107</sup> British photographic catalogues never reached such page counts again (see Illustration 45).

Circulation data is largely absent from the early period and even from the 1880s it was not generally divulged. From the later 1880s a small number of retailers began to boast about their catalogues and the numbers they produced. Fallowfield, for example, claimed 'seven thousandth edition now in the press of Jonathan Fallowfield's Special Season List. Six thousand exhausted First Week'.<sup>108</sup> Their 1904 *Annual* 'had applications for nearly 4000 copies' for which 1s 6d was being charged'.<sup>109</sup> T. S. & W. Taylor, later Taylor, Taylor & Hobson, the specialist lens manufacturers, claimed that 'During the past month 3000 copies of the new edition of our lens list...have been taken up'.<sup>110</sup> The retailer and manufacturer A. Adams & Co., was issuing 10,000 copies at a cost of £70 of *The Photographers Indispensable Monthly* which was both a house magazine and trade catalogue.<sup>111</sup> Thornton-Pickard's abridged catalogue of 1903 was produced in an edition of 25,000 'posted to all parts of the world'.<sup>112</sup> By comparison the *British Journal Photographic Almanac*, which also included complete or abridged versions of many makers' catalogues, had a print run of 25,000 copies.<sup>113</sup>

The distribution of catalogues evolved throughout the nineteenth century. Other than those copies bound in with manuals and books during the 1840s to 1860s, by the early 1880s catalogues were generally issued as separate publications and were sent on application either free or in return for postage. It is likely that the majority were distributed locally within the United Kingdom with only those from the largest manufacturers, going abroad. There was certainly demand for catalogues from

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<sup>107</sup> Noted from copies inspected.

<sup>108</sup> Advertisement, *British Journal of Photograph*, no. 1404, vol. 34, 1 April 1887, p. ix.

<sup>109</sup> *Photographic News*, no. 429, vol. 48, New Series, 11 March 1904, p. 167; *British Journal of Photography*, no. 2289, vol. 51, 18 March 1904, p. 225.

<sup>110</sup> Advertisement, *British Journal of Photography*, no. 1478, vol. 35, 31 August 1888, p. iii.

<sup>111</sup> 'Things we do know', *The Photographers Indispensable Monthly*, no. 3, December 1891, p. 27.

<sup>112</sup> *Photographic News*, no. 365, vol. 46, New Series, 26 December 1902, p. 849.

<sup>113</sup> *British Journal of Photography*, no. 2260, vol. 50, 28 August 1903, p. 681.

expatriates as a letter from 'J.P.S.' in 1889 suggests:

Photographic makers frequently note in their advertisements, "Catalogues sent post free on application, or on receipt of so many stamps." That doubtless applies to England; but if they would add in their advertisements "How many extra stamps for India," this would be useful both for photographers in India and advertisers at home.<sup>114</sup>

This method of distribution continued to 1914 with only slight variations over charges. Lancaster was an exception and made a charge of 4d for its catalogue in 1893. This was unusual, but perhaps justified as the *British Journal of Photography* felt able to describe it as 'a model of excellence'.<sup>115</sup>

The international market also became increasingly important during the 1890s. American firms began to target British customers with their own catalogues, usually distributed through a local agent or a branch company in London. British firms were also active in circulating their catalogues internationally, priced in the local currency. Usually this was done via a local agent that would also handle sales. Thornton-Pickard, as a mass-producer of cameras and apparatus, was particularly active in this respect. By 1900 it was issuing its illustrated catalogue in English, French, German and Spanish, and in the United States its wholesale agents issued 20,000 catalogues of its goods.<sup>116</sup>

The major manufacturers such as Kodak, Houghton and Butcher would supply their catalogues overprinted with a local dealer's name (see Illustration 46). This allowed the local dealer to convey the impression of carrying a large stock to customers and provided it with the ability to issue a catalogue that it otherwise would not have been able to produce. Manufacturers were able to leverage economies of scale in printing which they could pass on. The arrangement benefited both parties through the receipt of orders. It was explained in *The Photogram*:

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<sup>114</sup> 'Correspondence', *British Journal of Photography*, no. 1498, vol. 36, 18 January 1889, p. 47.

<sup>115</sup> 'Our Editorial Table', *British Journal of Photography*, no. 1728, vol. 40, 16 June 1893, p. 379.

<sup>116</sup> 'Commercial Intelligence', *British Journal of Photography*, no. 2083, vol. 47, 6 April 1900, p. 222; no. 2102, vol. 47, 17 August 1900, p. 526.

Dealers should especially note that Messrs Butcher supply their special catalogue for dealers' own distribution at less than one half the cost price, complete with dealer's name and address printed on the front cover. Any dealer who not already studied this offer with the catalogue before him ought to do so now.<sup>117</sup>

This service continued after the First World War with Houghton's *Ensign Handbook* for 1921 being offered at 'the rate of 50s per hundred, inclusive of printing of a dealer's name and address on the cover'.<sup>118</sup> It is likely that catalogues were also distributed at trade fairs and exhibitions that began to appear with increasing frequency from the late 1880s and across a shop counters, although no direct evidence has been found of this.

From the 1890s the larger non-specialist retailers, principally, Boots the Chemist, and some of the department stores, such as Spiers and Pond, Harrods and Whiteleys, produced their own photographic catalogues. They made extensive use of illustrative printing blocks and descriptive text from individual manufacturers' own publications and brought together products from different manufacturers that, ordinarily, were all business rivals issuing their own catalogues.<sup>119</sup> As an example, a Boots catalogue from circa 1904 included products from Butcher, Houghton, Kodak, Levi, and Lancaster as well as accessories from Tylar alongside advertising from Ilford Ltd.

As the distinction between the amateur and the trade consumer became more pronounced some wholesalers such as Houghton, Butcher, Fallowfield, and Marion, began issuing separate catalogues for these markets. By the 1890s the requirements of the commercial photographer were increasingly different from those of the amateur, particularly in terms of the type of equipment that they required. The large range of photographic goods stocked by some retailers and manufacturers encouraged them to

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<sup>117</sup> 'Trade', *The Photogram*, no. 126, vol. 11, June 1904, p. 171.

<sup>118</sup> 'The Ensign Handbook for 1921 season in prep.', *British Journal of Photography*, no. 3169, vol. 68, 28 January 1921, p. 57. This service was also continued by Kodak and Houghton-Butcher/Ensign into the post-World War Two period.

<sup>119</sup> *Price list of Photographic Department*, Nottingham: Boots Cash Chemist, n.d. The catalogue pre-dates 1904. The photographic press noted the issuing of catalogues from Boots indicating their importance as a source of goods for the amateur photographer. The 1904 catalogue had 88 pages with additional advertising pages. This had risen to 290 pages by 1909 with catalogues being produced annually.

issue catalogues in sections relating to particular types of goods. This method had been adopted by some of the larger optical and chemical manufacturers such as W. Watson & Sons, J. H. Steward, and Mawson and Swan, for which photography was only part of a much wider business and meant that the content of catalogues could be targeted towards particular customers.<sup>120</sup> As an example, the *Photographic News* reported that Marion & Company:

inform us that they are bringing out a new trade catalogue in sections. They have sent us a copy of the section relating to camera stands and shutters, which is replete with illustrated descriptions thereof. Other sections will appear in due course.<sup>121</sup>

The development of improved methods of printing, especially lithographic and half-tone reproduction, changed the appearance of the trade catalogue dramatically. By 1914, some catalogues were being comprehensively illustrated through line drawings, half-tones and coloured blocks. Some even featured bound-in or tipped-in real photographic reproductions to promote particular types of printing papers. This change, while partly reflecting technical improvements in printing and binding, was also driven by the need to impress consumers. Other firms emphasised the physical appearance of their catalogue. Newman and Guardia, for example, produced a large-format catalogue issued in a gilt-tooled cloth binding. The majority of firms, however, retained paper covers reinforcing their ephemeral nature although by 1914 coloured covers were increasingly used. Kodak Ltd's 1903 catalogue, for example, featured a colour illustration by George Walton.

The photographic press began to comment on the physical appearance of trade catalogues with greater frequency from the later 1880s. Phrases such as 'illustrations are good', 'imposing volume and arranged with taste', 'beautifully printed' and 'a work of

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<sup>120</sup> Both these manufacturers issued their trade catalogue in sections of which photography was one. Steward's *Catalogue of Optical Instruments* c1902, comprised Part I – Binocular Field & Race Glasses; Part II – Meteorological Instruments; Part III – Microscopes and Apparatus; Part IV(A) – Surveying Mathematical and Nautical Instruments; Part V – Improved Optical Lanterns; Part VIII – Military Instruments; Part IX – Photographic Cameras.

<sup>121</sup> *British Journal of Photography*, no. 1720, vol. 40, 21 April 1893, p. 256.

art' began to be incorporated in reviews and notices. The number of illustrations, the quality of paper and typography were all deemed worthy of comment alongside the catalogue content, and in July 1889 the *British Journal of Photography* declared that 'catalogue-making...seems to be becoming elevated into an almost fine art'.<sup>122</sup>

Depending on the designer, some catalogues reflected more general design trends of the period with trade marks and logos incorporated as branding, and corporate reputation was increasingly seen as having a key role in selling goods.

The basic content of the trade catalogue changed remarkably little between 1840 and 1914. There were obviously differences between those issued by manufacturers that just listed their own goods and retailers that listed a range of products according to the nature of their business. In their catalogues the earliest retailers, many of whom also made, or had made for them, some of the goods listed, adopted the form that George Knight used in his 1847 catalogue included in *Photographic Manipulation*. This listed, in order: cameras, accessories, lenses, plates and papers, processing accessories and concluded with chemicals.<sup>123</sup> Griffin's catalogue of 1914 had modified this order only slightly reflecting the firm's own strength as a manufacturer of sensitised papers, describing, in order, photographic papers, plates, chemicals and apparatus.<sup>124</sup> Most general retailers followed the Knight model, with Jonathan Fallowfield listing sixteen sections in its 1887 catalogue starting with lenses, cameras, accessories, dry plates, chemicals and papers before concluding with frames, mounts and magic lantern materials.<sup>125</sup>

*The Photogram* published advice concerning the production and content of photographic apparatus catalogues in 1902 which it saw as 'a most important factor in

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<sup>122</sup> 'Our Editorial Table', *British Journal of Photography*, no. 1525, vol. 36, 26 July 1889, p. 495. The comment was made in a review of Marion & Company's catalogue.

<sup>123</sup> Robert J. Bingham, *Photographic manipulation: Part 1. Containing the theory and plain instructions in the art of photography*, London: George Knight and Sons, 1847.

<sup>124</sup> *Price List*. London: John J. Griffin & Sons, Ltd, 1914.

<sup>125</sup> Advertisement, *Photographic News*, no. 1446, vol. 31, 25 February 1887, p. xii.

securing new users'. It emphasised the need for catalogues to be 'the embodiment of perfection in every detail' and concentrated on the need for half-tone illustrations. Reproductions of cameras were advised to be half-tone except when a woodcut was needed to show details and exact size photographs showing the type of work that could be secured by the camera was considered essential.<sup>126</sup>

From the 1880s the introductory pages of catalogues were used to describe the strengths of the business and a firm's business methods. Pictures and descriptions of manufacturing works and retail premises appeared:

The illustrations showing the workshops in which Mr Lizars' specialities are manufactured are of interest, and convey a good idea of the many appliances necessary for the construction of photographic apparatus in quantity.<sup>127</sup>

The *British Journal of Photography* précised Watson's own extended description taken from its 1898 catalogue which the firm also illustrated:

Messrs Watson's manufacturing premises comprise Nos. 9, 10, 11, 16 and 17 Fulwood's-rents, High Holborn, and provide 24,000 square feet of space. Being adjacent to their warehouse, these factories and the work done therein are under their immediate and personal supervision. Their stock or mahogany, consisting of about 100,000 feet of the choicest kinds, is seasoned in their own factories. Messrs Watson carry out, as far as possible, the system of fitting the parts of their cameras and lenses to standard gauges, so that, in the event of loss or breakage of dark slides, fronts, screw nuts, &c., extra ones may be supplied without the necessity of sending the instruments to fit them.<sup>128</sup>

Houghtons' massive catalogues of 1910-1914 carried and illustrated extensive descriptions of its Walthamstow factory. The terms of conducting business, which had always been part of the catalogue, became more important with the economic downturn at the start of the early twentieth century. Watson in its 1901 catalogue described its

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<sup>126</sup> 'How to compile a photographic apparatus catalogue', *The Photogram*, no. 98, vol. 9, February 1902, pp. 50-51. The text of this article had first appeared in the American journal *Advertising Experience*.

<sup>127</sup> 'New Catalogues Received. J. Lizars', *Photographic News*, no. 18, vol. 40, new series, 1 May 1896, p. 286.

<sup>128</sup> 'Our Editorial Table. Catalogue Received. W. Watson & Sons', *British Journal of Photography*, no. 1996, vol. 45, 5 August 1898, p. 509.

progressive payments system for purchases over £5 that could be bought by monthly instalment.<sup>129</sup> Credit terms, discounts and shipping methods associated with more formal methods of doing business grew in prominence. These were all designed to encourage amateurs to buy goods.

As catalogues grew in size, general advice and technical information was imparted which the *British Journal of Photography* commented upon in 1912:

It is common to find much valuable technical information in the price lists and booklets which in the past have been freely issued chiefly by manufacturers of plates and papers and of photographic lenses. We are glad to see that this policy of advising the purchaser is being applied by the dealer in general photographic requisites... These notes... should provide a welcome addition to the commercial price list which finds its way into the hands of those anxious to avail themselves to the best advantage of the goods upon the market.<sup>130</sup>

Some of the makers of better quality cameras used their catalogues' introductory pages to describe their cameras in considerable detail, illustrated with photographs taken by them. As the *British Journal of Photography* noted about Newman and Guardia's 1904 catalogue:

It dilates upon the many admirable qualities of the N. & G. Reflex Cameras, and points its remarks with beautifully printed half-tone illustrations showing in a practical manner what can be undertaken and what can be achieved with these splendid instruments.<sup>131</sup>

There is little doubt that the trade catalogue had become an essential sales tool for manufacturers and retailers to market photographic products, both to a general and a more specialist audience. The arrival of significant numbers of amateur photographers acted as a catalyst for this and increased competition amongst retailers and manufacturers from the 1880s, which made the catalogue a prime tool for promoting

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<sup>129</sup> 'Latest Catalogue of W. Watson & Sons', *British Journal of Photography*, no. 2147, vol. 48, 28 June 1901, p. 413.

<sup>130</sup> 'Ex cathedra. Technical Catalogues', *British Journal of Photography*, no. 2726, vol. 59, 2 August 1912, p. 589. The editorial comment was made in the context of the receipt of O. Sichel and Co's catalogue of requisites for the professional photographer which was also reviewed in detail on page 601 of the same issue.

<sup>131</sup> *British Journal of Photography*, no. 2315, vol. 51, 16 September 1904, p. 805.



goods, generating business and differentiating themselves from competitors. The number of catalogues from different firms grew, print runs increased and their distribution became more effective as the nineteenth century progressed. The more difficult trading conditions in the early twentieth century changed the emphasis of the amateur catalogue away from pure descriptions of products and towards the low cost of the products described within its pages and the ease of buying and paying for goods.

The writer and historian, W. Jerome Harrison, recognised the importance of trade catalogues and included mention of them in his extensive bibliography of photography which appeared from 1887. He noted:

Catalogues of Apparatus. Several of the large dealers in photographic apparatus issue Catalogues of their goods which afford much useful information, being sometimes, indeed, guide and price list in one. Among these we may name, in London, Messrs Wratten and Wainwright, W.W. Rouch and Co., Sands and Hunter, W. Watson and Sons, J. F. Shew and Co., H. and E. J. Dale, J. Fallowfield, Marion and Co., W. Lawley, &c.; and in the provinces George Mason and Co., Edinburgh; H. Newton and Co., Liverpool; Mawson and Swan, Newcastle-on-Tyne; and J. Lancaster and Son, Birmingham.<sup>132</sup>

Catalogues were also considered a key resource at the Patent Office where they were collected from the mid-1870s. In 1896 a letter from Kenric B. Murray copying a letter from H. Reader Lack - the Comptroller-General of the Patent Office - asked readers of the *British Journal of Photography* for suggestions to make the collection more complete.<sup>133</sup> The reviews of catalogues that appeared in the photographic press also emphasised their worth as reference tools. Those from J. Lancaster of Birmingham were frequently praised as 'far too good a thing to be lightly thrown aside or destroyed' and

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<sup>132</sup> W. Jerome Harrison, 'The bibliography of photography', *Photographic News*, no. 1492, vol. 31. 8 April 1887, pp. 214-215.

<sup>133</sup> 'Correspondence. Filing of Trade Catalogues at the Patent Office', letter from Kenric B. Murray, *British Journal of Photography*, no. 1868, vol. 43, 21 February 1896, p. 127. The collection of trade catalogues at the Patent Office became part of the Science Reference Library and now resides at the British Library where it is accessible only through a paper catalogue. A number of the listed catalogues are missing and others have been incorporated into the library's main collection.

their worth extolled 'the amateur who is without Lancaster's catalogue cannot claim to be up to date'.<sup>134</sup>

### *External advertising*

Letterpress bill posters and, later on, chromo-lithographic posters, were popular methods of advertising in continental Europe. They were less used in Britain but some photographic manufacturers such as Kodak and Houghton did publish posters to promote their products (see Illustration 47). They were generally made for interior use rather than for outside display and it was only from the 1920s and 1930s that posters became more widely used.

Kodak was progressive in its use of illuminated and outdoor signage to promote itself and to keep the company name in front of potential customers. In 1897 it had erected in Trafalgar Square, London, a seven foot high electric sign spelling 'Kodak'.

Commenting on this 'magnificent' 'indication of enterprise and prosperity' the *British Journal of Photography* described it: 'by day it is seen as a bright golden word, and by night it flashes the company's trade mark in the view of crowds at the heart of London'.<sup>135</sup> Kodak's new premises in Clerkenwell Road, London, which opened in 1902, were emblazoned with the word 'Kodak' in wood letters seventeen feet high.<sup>136</sup>

The way the shop window facing on to the street was used by retailers underwent significant changes. It moved from simply a means of admitting light and showing goods to actively encouraging customers to enter the shop. By the start of the twentieth century the principal photographic retailers, in common with other retailers, had recognised the role that window displays could play in attracting customers. Coloured and logo-branded materials for use in windows were produced for retailers. Generic

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<sup>134</sup> *British Journal of Photography*, no. 1674, vol. 39, 3 June 1892, p. 368; *Photographic News*, no. 1759, vol. 36, 20 May 1892, p. 336.

<sup>135</sup> 'News and notes', *British Journal of Photography*, no. 1941, vol. 44, 16 July 1897, p. 461.

<sup>136</sup> 'The Kodak Company's new premises', *British Journal of Photography*, no. 2210, vol. 49, 12 September 1902, pp. 734-735.

show cards for dealers to use featuring wording such as 'Dark room for the use of amateurs', 'Amateurs supplied with photo apparatus chemicals &c at lowest prices' and other variants, alongside display stands and pedestals for cameras displays, were all offered by manufacturers and wholesalers to retailers before 1914.<sup>137</sup> W. Butcher and Sons Ltd, in their 1914 catalogue emphasised that their publicity department was at the disposal of their customers without charge. It was able to offer:

Assistance in preparing copy for your catalogue or leaflets / The preparing of display advertisements in the general of local press / Or for any other service that will help sales to our mutual benefit.<sup>138</sup>

This service included the supply of show cards and handbills describing apparatus and the loan of electrotypes of goods for printing purposes. A wide range of other literature was also available which could be over-printed with a dealer's name and address. Display cases, pedestals, price tickets and posters, and window canopies were also available for purchase.<sup>139</sup> Manufacturers and wholesalers recognised that they shared a mutual interest with retailers in reaching the amateur market and worked together in presenting a more effective public face.

From the late 1890s a number of photographic manufacturers and retailers began to make use of well-known commercial artists for their publicity materials. W. Butcher and Sons used John Hassell to design a range of coloured posters and show cards, Houghton used the Punch artist Charles Harrison to illustrate the use of the Ticka camera in various parts of the world and in the early 1920s Wellington and Ward, the sensitised goods manufacturer, was using W. Heath Robinson to design a series of humorous advertisements for them.<sup>140</sup> Hassell later worked for Kodak to realise the Kodak girl concept in 1910. The use of popular artists supported the recognition by

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<sup>137</sup> *Photographic Price List 1914*, London: Houghtons Ltd., 1914, pp. 739-740. W. Butcher and Sons and Kodak were also supplying similar materials.

<sup>138</sup> *The Camera House price list 1914*, London: W. Butcher and Sons Ltd., 1914, p. 5.

<sup>139</sup> *The Camera House price list 1914*, London: W. Butcher and Sons Ltd., 1914, pp. 6-28.

<sup>140</sup> 'News and Notes. The "Ticka" Title competition', *British Journal of Photography*, no. 2457, vol. 54, 7 June 1907, p. 433.

consumers of manufacturers' products and the same image could be used in different several forms such as posters, advertisements and postcards.

#### *Trade and amateur exhibitions*

Commercial exhibitions of photographic goods were increasingly held from the 1870s. These were local events rather than the international exhibitions of 1851 and 1862 and, in contrast, they were wholly commercial in their aims. Provincial manufacturers exhibited their products in London. Initially the offices of the main photographic periodicals played a role in acting as venues for these which were mainly aimed at trade customers. Early in 1872 D. H. Cussons and Company of Southport, which specialised in studio accessories, advertised that: 'Mr Cussons will be in London for a short time, from the 6<sup>th</sup> February, with some of our newest accessories for the studio, which (by favour of the Editors) will be shown at the office of the *British Journal of Photography*, 2 York Street, Covent Garden WC, where we shall esteem the favour of an early call'.<sup>141</sup> Other manufacturers from outside London also showed their goods in this way.

For manufacturers to reach amateur photographers, photographic societies and camera clubs became important venues for exhibiting goods. These gave them direct access to an audience with a professed interest in the subject. Most societies ran regular exhibition evenings where manufacturers could show their products or give demonstrations. The *British Journal of Photography* reported one such event in 1890:

an attractive exhibition of apparatus was given under the auspices and in the rooms of the Hackney Photographic Society at Morley Hall. The tables were well covered with apparatus sent by Marion & Co., Abrahams, Mawson & Swan, the Eastman Company, Watson, Hart, Crouch, Fry, and others. Messrs. Edwards & Co., and the Britannia Company (Ilford), contributed a variety of photographs illustrative of their special manufactures, and many specimens of the work of members was exhibited.<sup>142</sup>

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<sup>141</sup> Advertisement, *British Journal of Photography*, no. 613, vol. 19, 2 February 1872, p. iii.

<sup>142</sup> 'Three metropolitan exhibitions', *British Journal of Photography*, no. 1557, vol. 37, 7 March 1890, p. 154.

It is difficult to assess how effective these evenings were in terms of direct sales. An exhibition unquestionably raised awareness of manufacturers' goods and provided an opportunity for amateur photographers to handle equipment away from a shop environment. There is no evidence that manufacturers offered preferential sale terms or even made direct sales at these events. Their regularity and the fact that most manufacturers participated in such events suggest that there was a commercial payback.

### *Representatives*

The use of travelling representatives to sell and promote products for manufacturers had become increasingly common by the 1890s. Photographic manufacturers also employed representatives as a means of selling their products directly to retailers. A number appointed representatives to visit dealers in order to secure sales and promote products. In 1897 the Paget Prize Plate Company of Watford announced that it had appointed Mr A. C. Baldwin as its representative and this was one of many such announcements in the photographic press.<sup>143</sup> Such agents were generally provided with a salary plus expenses and frequently earned a commission on the sales that they generated. They would usually be assigned to a specific area or region. Women were also employed as representatives and had a reputation for generating better sales than their male counterparts. A report in 1905 noted: 'A feminine worker, it appears, travels for a wholesale firm of photographic and optical dealers, and she takes more orders than any of the men travellers in her firm.'<sup>144</sup>

### *Testimonials and endorsements*

Photographic manufacturers of both equipment and sensitised materials had been quick to market their products by using endorsements from the 1850s and this means of attracting sales was refined from the 1880s. Mawson and Swan was particularly forward

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<sup>143</sup> 'News and notes', *British Journal of Photography*, no. 1919, vol. 44, 12 February 1897, p. 123.

<sup>144</sup> 'News and Notes', *British Journal of Photography*, no. 2380, vol. 52, 15 December 1905, p. 996.

in their use of testimonials in their advertising, noting in 1888 that 'testimonials of the highest character have been received during the past few weeks' from the editors of the *British Journal of Photography*, *Photographic News* and *Amateur Photographer*.

Mawson and Swan also printed an extensive list of professional photographers that used their products.<sup>145</sup> Increasingly these endorsements were directed towards the snapshotter and testimonials from photographic personalities gave way to those known more widely. Newman and Guardia, the camera manufacturer, made extensive use of endorsements and on one occasion published a book written by the novelist S. R. Crockett, which explained why the camera was superior to the pen and pencil and how he came across the Newman and Guardia advertisement. The boundaries between an advertisement and endorsement were not always clear.<sup>146</sup> The promotion by manufacturers of the use of their cameras and plates by explorers and on expeditions, which often enjoyed extended coverage in the popular press, was particularly favoured.

The royal warrant was perhaps the most prized marketing aid for many manufacturers and before the passing of the Patents, Designs and Trade Marks Act in 1883 many made spurious claims about royal patronage.<sup>147</sup> Horne and Thornthwaite, as opticians, philosophical and photographic instrument makers, was granted a royal warrant on 1 July 1857 and Robert Charles Murray, as a manufacturer of scientific, chemical and physical apparatus was granted one in 1872, although many other firms supplied the royal household with photographic goods without receiving a formal warrant.<sup>148</sup> Murray remained a warrant holder until 1912 when his name was omitted from the list.<sup>149</sup> There

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<sup>145</sup> Advertisement, *British Journal of Photography*, no. 1461, vol. 35, 4 May 1888, p. xiv.

<sup>146</sup> *British Journal of Photography*, no. 2098, vol. 47, 20 July 1900, p. 450. Samuel Rutherford Crockett (1860-1914) was a Scottish novelist writing mainly between the mid-1890s and 1914

<sup>147</sup> Patents, Designs, and Trade Marks Act 1883, 46 & 47 Vict, c. 57.

<sup>148</sup> See: Roger Taylor, 'Photographers to her majesty' in Frances Dimond and Roger Taylor, *Crown and Camera. The royal family and photography 1842-1910*, pp. 211-213. Taylor discusses the background around the issuing of royal warrants and the changes that took place to formalise their use. He provides a list of photographers granted royal warrants.

<sup>149</sup> 'News and notes', *British Journal of Photography*, no. 2698, vol. 59, 10 January 1912, p. 53. Murray was omitted from the list of royal warrant holders the journal noting that 'his business of later years having lain largely in the photographic equipment of expeditions, outfits for explorers, etc., as well as in the manufacture and supply of photographic requisites specially to individual requirements'.

was a general interest in photography from Queen Victoria and Prince Albert which did much to make photography respectable. The *British Journal of Photography* acknowledged this:

Her Majesty and Her Royal Consort, who have upon very many occasions publicly expressed, both by word and deed, their more than common interest in the advance of photography, not only continue to manifest proofs of their appreciation of its productions, but to show that the same increases.<sup>150</sup>

Members of the royal household were instructed in photography and their children were encouraged to take photographs. In 1860 Prince Alfred was given a complete photographic outfit by Murray and Heath, which was intended to accompany him on his maritime expeditions.<sup>151</sup> He became an enthusiastic amateur photographer.

The most committed royal photographer was Princess Alexandra of Denmark who would become Queen Alexandra, the wife of the Prince of Wales and future King Edward VII. By 1889 she owned a No. 1 Kodak camera and subsequently bought other models of Kodak cameras. The Kodak company and Alexandra enjoyed a close relationship for many years with the firm undertaking developing and printing work and making enlargements for her. It also exhibited her photographic work in Kodak sponsored charity exhibitions (see Illustration 48).<sup>152</sup> In recognition of this a royal warrant was issued to George Eastman on behalf of Kodak Limited for the supply of photographic apparatus to Queen Alexandra on 1 July 1901. Ross Limited were appointed opticians to King George V in 1911.<sup>153</sup>

Royalty and notable clientele from elsewhere, especially from within the British

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<sup>150</sup> 'Royal patronage of photography', *British Journal of Photography*, no. 119, vol. 7, 1 June 1860, p. 157.

<sup>151</sup> *British Journal of Photography*, no. 119, vol. 7, 1 June 1860, p. 157. The journal reported that it had 'a few weeks ago' inspected the outfit.

<sup>152</sup> 'The Kodak at Court', *British Journal of Photography*, no. 2080, vol. 47, 16 March 1900, p. 173. See: Frances Dimond, *Developing the picture. Queen Alexandra and the art of photography*, London: Royal Collection Enterprises, 2004, for a discussion of Alexandra's involvement with photography and with Kodak.

<sup>153</sup> 'News and notes', *British Journal of Photography*, no. 2644, vol. 58, 6 January 1911, p. 11.

Empire, were also given prominence in advertising and within the photographic press. The camera maker George Hare, was commissioned by the Maharajah of Punnah to make a camera which the *British Journal of Photography* was invited to see in 1875 and reported on:

Everything about the apparatus, including the swinging adjustments of the camera, the slides, and even the camera stand, attests the taste and discrimination of the gentleman for whom it is intended, as well as the skill of the maker, whose name, "by command," together with that of Maharajah, is emblazoned on a massive silver plate.<sup>154</sup>

Some twenty-five years later in 1901 A. Adams and Company was commissioned by the Sultan of Morocco 'to manufacture two of the finest and most luxurious hand cameras that it is possible to produce...each instrument is to eclipse all records in camera construction and will cost many hundreds of pounds'.<sup>155</sup> The two cameras were made with gold and silver parts and cost £2100 and £900 respectively. They were exhibited at Adams's showrooms before they were despatched and generated publicity in the photographic press.<sup>156</sup> The same year Thornton-Pickard supplied a Ruby camera to the King of Portugal and supplied ten Ruby outfits to the Viceroy of India's official photographer.<sup>157</sup>

Other notable clients were made mention of in advertising or through notices in the photographic press. The lens maker Dallmeyer and camera maker Ottewill worked together on a complete outfit for the newly established photographic department of the Italian government and again on an order for the photographic department at South

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<sup>154</sup> 'A camera for the east', *British Journal of Photography*, no. 766, vol. 22, 8 January 1875, p. 23. The camera was discovered in 1975 and was offered at auction by Christie's in London on 11 December 2002.

<sup>155</sup> 'Commercial and legal intelligence', *British Journal of Photography*, no. 2131, vol. 48, 8 March 1901, p. 152.

<sup>156</sup> 'The last word in photographic cameras', *British Journal of Photography*, no. 21, vol. 48, 5 July 1901, Monthly Supplement [The Lantern record], p.55.

<sup>157</sup> 'The Thornton Pickard Manufacturing Company', *British Journal of Photography*, no. 2131, vol. 48, 8 March 1901, p. 152.



Kensington in 1861.<sup>158</sup> Government departments such as the Ordnance Survey department and the War department were frequently cited by camera manufacturers as clients. J. Lizars of Glasgow in 1901 described one of the largest cameras manufactured in Britain which it had made for the Ordnance Survey in Southampton.<sup>159</sup> Others manufacturers were content just to claim that they were suppliers to the government.

#### *New communications*

As new developments in communication were commercialised during the nineteenth century so retailers and manufacturers adopted these. They fulfilled a business need in supporting communication within a business or with their customers and they emphasised their modernity to clients. The telegraph was the first of these. Negretti and Zambra and the London Stereoscopic Company were early adopters in the early 1860s. Both firms had multiple branches that benefited by being in instant communication with each other. In Negretti and Zambra's case a private telegraph wire was installed between their Cornhill, Regent Street and Hatton Garden branches. The London Stereoscopic Company linked its retail branch in Cheapside with its photographic printing establishment in Surrey and was able to transmit orders for cartes-de-visite immediately they were taken.<sup>160</sup> Later, as the telegraph was adopted nationally a number of companies compiled trade catalogues that noted telegraphic codes which could be quoted when ordering products to keep the cost of telegraphing, which was paid for by the word, to a minimum.<sup>161</sup> The arrival of the telephone later in the century had a similar effect with its adoption by manufacturers being a cause for comment in the

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<sup>158</sup> *British Journal of Photography*, no. 145, vol. 8, 1 July 1861, p. 243; 'Photographic olla podrida', *British Journal of Photography*, no. 151, vol. 8, 1 October 1861, p. 348.

<sup>159</sup> *British Journal of Photography*, no. 2167, vol. 48, 15 November 1901, p. 730. Lizars noted that the construction of the instrument and three slides used '450 square feet of Spanish mahogany, varying in thickness from 3/8 in. to 2¼ in., and valued at over £35 in its raw state. In the construction there were used 106 brass bindings, weighing nearly half a hundred weight of metal, and 1,560 screw nails, the total weight of the camera and three slides, including the focussing screen, being over 1 ton.' The camera would have been used for copying maps for printing purposes.

<sup>160</sup> 'News and notes', *British Journal of Photography*, no. 149, vol. 8, 2 September 1861, pp. 313-314.

<sup>161</sup> 'Trade', *The Photogram*, no. 73, vol. 7, January 1900, pp. 30-32. Newton and Company was one such company which drew up a code list for ordering lantern slides.

photographic press and by firms in their advertisements. Joseph Levi and Company, for example, in 1898, advised their customers that 'they are now connected with the telephone. Their number is 1001 Holborn'.<sup>162</sup>

### *Branding and corporate identity*

Before the 1870s manufacturers and retailers had generally not made use of logos or icons to identify their business or products. For the most part the name of the proprietor and a description of the product was considered sufficient to achieve recognition by customers.<sup>163</sup> Even within advertising there was rarely any attempt at defining a standard identity through the consistent use of a typeface, style or a name which was determined more by the type available at the printer. New methods of marketing that were being introduced from the United States began to emphasise the need for branding and a corporate style. The growth of mass markets generally, and in particular within photography from the early 1880s, acted as a catalyst for many firms to consider their public face. Trade marks and trade names began to be adopted by manufacturers and retailers.

In Britain a parliamentary select committee had been established in 1862 to determine whether a system of trade mark registration should be introduced. The committee decided against a formal registration system and the Merchandise Marks Act of 1862 was introduced to deal with the false marking of goods. The Act was ineffective. The passing of legislation in the United States and elsewhere in Europe and increasing commercial pressure for formal trade mark registration in Britain led to the passing of the 1875 the Trade Marks Registration Act.<sup>164</sup> It provided for a public register of trade

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<sup>162</sup> 'News and notes', *British Journal of Photography*, no. 1988, vol. 45, 10 June 1898, p. 380.

<sup>163</sup> Although there is a distinction between a logo which is word based and an icon which is pictorial, in practice logos often incorporate pictorial elements and the distinction is rarely applied with both words being used interchangeably to include both forms.

<sup>164</sup> A short and useful survey of trade mark law is given in David C. Newton, *Trade Marks. An introductory guide and bibliography*, London: The British Library, 1991. Graeme B. Dinwoodie and Mark D. Janis, *Trademark law and theory: A handbook of contemporary research*, Cheltenham: Edward Elgar Publishing, 2008, pp. 28-30, provide a good summary of the effects and benefits of the 1875 Act.

marks together with details of the owner and the classes of goods for which it was being used. Although it did not declare trade marks to be property the registration system provided clear supporting evidence when action against infringers was required.

The register of trade marks was opened on 1 January 1876 and a small number of photographic manufacturers made use of it during its first year. James Forrest of Liverpool registered his trade mark for photographic glass on 9 March and claimed its use for fifteen years prior to this date.<sup>165</sup> For the first years of the register's operation photographic glass, chemicals and papers were the main items being protected with a trade mark. These were goods that did not provide any clear indication of quality from their appearance and thus made a trade mark particularly useful. In contrast a camera, for example, could be examined and its manufacturing quality and utility assessed more readily than a sealed packet of photographic printing paper.

By 1900 chemicals, papers and films had been joined by equipment such as cameras and lenses in being protected with a trade mark. Manufacturers such as J. J. Griffin, Kodak and Lancaster were regularly taking out trade marks across a range of classes of goods.<sup>166</sup> Many photographic manufacturers and retailers did not consider formally registering their marks and trade names a necessity. They developed logos that were used across their goods and trade names for particular types of goods and used them successfully without formal protection. Some manufacturers and retailers adopted a corporate type face, logo and house colours that were used consistently across their advertising and packaging to reinforce a brand identity to the consumer. In the early

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<sup>165</sup> Trade mark number 3696, registered 9 March 1876.

<sup>166</sup> A review and compilation of photographic trade marks between 1 January 1876 and 31 December 1900 has been undertaken. The registrations can be found in *Trade Marks Journal. List of Applications for the Registration of Trade Marks*. no. 1, vol. 1 (1 May 1876) to no. 1187 vol. 25 (26 December 1900), London, Her Majesty's Stationary. Photographic manufacturers were registering both logos and icons to protect their goods. As examples J. Lancaster and Son applied for registered of the words 'Le Meritoire', 'The Instantograph' and 'Le Merveilleux' which were used for ranges of amateur cameras on 1 March 1884, nos. 35,871, 35,872 and 35,873; and registration of the word 'Kodak' was made by The Eastman Dry Plate and Film Company on 3 May 1888, no. 75,818. Lancaster applied for its shield design to be registered on 30 April 1885, number 44722 on and the Autotype Company applied for its sunrise design which it had been using for some five years to be registered on 17 January 1876, number 886.

1900s several companies employed commercial artists to refine a number of these. Wellington and Ward employed 'FKU' and Elliott and Sons employed the well-known artist Charles E. Dawson to design advertisements in 1904. The former also used George Walton, who also worked for Kodak, to design some of their advertising as well as exhibition stands which all featured a consistent and distinctive design between 1905 and 1908 (see Illustrations 48 and 49).<sup>167</sup>

Logos and trade names were intended by manufacturers to reinforce recognition amongst consumers, especially amongst amateurs and snapshotters (see Illustration 50).<sup>168</sup> By the 1900s there were many competing brands of films and papers and a distinctive design attracted attention. Through repetition it provided familiarity, could suggest quality and gave an amateur confidence that the product was made to a particular standard. The few logos employed by photographic firms during the late nineteenth century and early 1900s tended to be a representation of the firm's initials or a name usually with a graphic symbol. Ilford Limited, for example, introduced a paddle steamer logo in 1886 that featured the word 'Ilford', the Illingworth company used an inverted horseshoe. More typical was the use of particular words that became associated with the company's products: Marion and 'Soho', Ilford and 'Selo' and Sharp and Hitchmough's 'Aptus' were a few amongst many others.

The naming of ranges of goods became important in encouraging a perception of the product by consumers. The importance given to branding through these names is evident from the late 1890s when manufacturers began to defend their names against imitators in court. Kodak was particularly concerned about names that looked or sounded like its trade names and was active in protecting these against other manufacturers' attempts to pass off products as Kodaks. In 1899 it formally objected against the use of Pakko as a trade name for photographic paper due to its similarity to its own papers named Nikko and Dekko. An application to register Simplio was also

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<sup>167</sup> Advertisement, *British Journal of Photography*, no. 2496, vol 55, 5 March 1908, p. vii.

<sup>168</sup> For a recent discussion of this see: John Mercer, 'A mark of distinction: Branding and trade mark law in the UK from the 1860s', *Business History*, 52 (2010), 1, pp. 17-42.

refused for same reason and a potential confusion with Kodak's Solio brand.<sup>169</sup>

In addition to an association with a particular company, words also reinforced a particular characteristic of a product in the mind of the consumer. Remarking in 1896 on the naming of plates and Mawson and Swan's new Electric plate the *British Journal of Photography* noted:

Quite a competition among plate-makers has sprung up in the invention or selection of distinctive names for their various brands of plates. Such names as convey the idea of rapidity, of emulsion, or exalted quality, are in particular request.<sup>170</sup>

Words associated with speed, modernity and royalty were typically used by photographic manufacturers and retailers for their products. Word plays and made-up words, of which 'Kodak' was the best known example, were also widely used.

### **Pricing photographic goods**

During the nineteenth and early twentieth centuries the trend for both photographic equipment and sensitised materials was for them to fall in price in both real and absolute terms. The largest manufacturers benefited from economies of scale achieved through the move away from hand labour to mechanised production. This supported mass-production and helped alleviate declining income by reducing costs more quickly. Both these changes, prompted by greater competition, were also responsible for general price reductions. Manufacturers producing for the smaller professional market or for niche markets such as three-colour photography could ignore such pressures and maintain prices. For the photographer, as the end user of equipment, and, more importantly, of sensitised goods, retail prices fell by twenty-five per cent on average between 1860 and 1897, reflecting a fall in the price of raw materials and greater competition after 1880.

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<sup>169</sup> 'Ex cathedra'. *British Journal of Photography*, no. 2061, vol. 46, 3 November 1899, p. 689.

<sup>170</sup> 'Ex cathedra.'. *British Journal of Photography* no. 1862, vol. 43, 10 January 1896, pp. 18-19.

As an example, the price of silver depreciated by more than fifty per cent over the period. John Randall claimed this had helped the photographer although he also noted that photographic prices were not fixed solely by the market value of the product but, in the case of the commercial studio, resided in the skill of the photographer. This, he argued, explained the diverse range of five shillings to £2 2s for a photograph. For the majority of high street photographers competition and costs were more important factors in setting their prices.<sup>171</sup>

For the consumer this was obviously beneficial, but for the retailer the situation was less satisfactory. Randall in his review of photographic prices published in 1897 noted that 'not a single article [used in photography] has risen in price' between 1851 and 1896 although rents had increased eighty per cent and rates and taxes had increased thirty per cent. For photographic plates, which were a key stock item for the retailer, average prices fell 25 per cent between 1886 and 1896.<sup>172</sup> Such falls in the retail price of photographic goods was likely to have been mirrored in their wholesale price which would have helped the retailer. But by the end of the 1890s and early 1900s retailers were increasingly constrained in what they could charge for goods not simply by economic pressures from competitors, but by the terms under which they purchased their stock. Most manufacturers had suggested retail prices and prohibited price-cutting.

Set against this was the massive expansion of the amateur market and the growth of the snapshotter over the same period which initially balanced the decline in prices as sale volumes increased. Although there are no surviving accounts from photographic retailers to support this argument advertising by plate manufacturers noted substantial increases in production, which suggests that they were responding to an expanding demand for their products. It is also significant that the number of photographic retailers expanded significantly during this period. In London, for example, after an early growth

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<sup>171</sup> John A. Randall, 'A history of photographic prices', *British Journal of Photography*, no. 1938, vol. 44, 25 June 1897, pp. 410-411.

<sup>172</sup> John A. Randall, 'Wholesale prices from 1851 to 1896', *British Journal of Photography*, no. 1944, vol. 44, 6 August 1897, pp. 505-506.

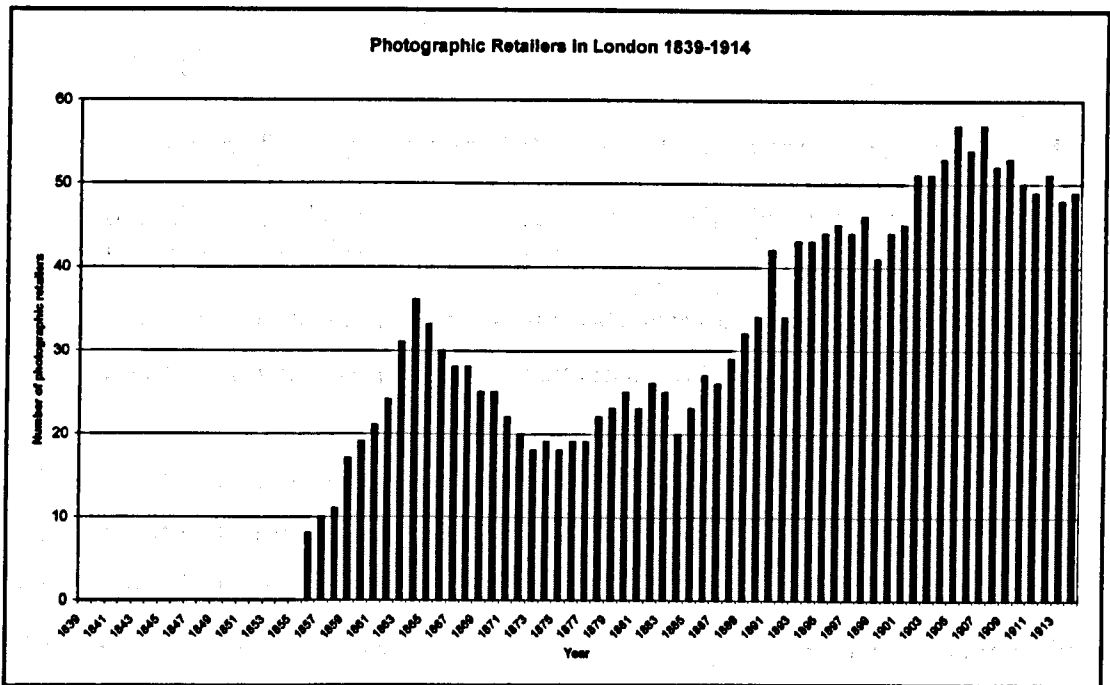


Figure 18. Photographic retailers in London 1839-1914. Source: *Post Office London directories*.

and brief decline, the number of retailers grew steadily from just twenty in 1865 to nearly sixty by 1907, as shown in Figure 18 and largely excludes chemists, department stores and other non-specialist retailers that entered the market from the mid-1890s. This rise reflects a growing demand for photographic goods and the rise was mirrored in other cities and towns. The growth in London clearly shows the impact of a growing amateur market from the mid-1880s to 1900 at a time when the number of professional studios was static. It is also apparent that the amateur market was able to support and contributed to an expansion of photographic retailing.

Aside from price there were other ways that photographic retailers could encourage and retain business. One method was by offering incentives to customers through devices such as extended payment terms for cameras. Although widely used in other areas of high consumer demand such as bicycle and sewing machine retailing it was sufficiently novel amongst photographic retailers for the trade-orientated publication *The*

*Photogram* to make note of the system introduced by William Paterson, a photographic retailer, in Highgate, London, in 1899:

his system of supplying photographic goods for cash or upon easy terms, and in one of his letters to us he draws attention to the fact that these easy terms are ones that he really tries to make "easy" by allowing his customers to arrange their payments as best suits their own convenience.<sup>173</sup>

Other retailers also introduced payment for goods over fixed timescales and by 1914 it was an accepted way to secure business at all price levels.

Price-cutting and discounting was seen as a particular problem by manufacturers and was frequently blamed on the arrival of chemists and non-specialist photographic retailers into the photographic trade. Commentators such as 'Cosmos' blamed their arrival for the ruining of the photographic retail trade 'by mercilessly cutting prices all round'.<sup>174</sup> In an effort to meet this trend head on Kodak removed the wholesaler from its supply chain and began enforcing fixed prices for goods by legal means.

### **Kodak and its response to competition**

The Eastman Photographic Materials Company Limited had expanded rapidly during the 1890s. From 1897 Kodak began opening a series of wholly owned retail branches selling directly to the consumer and the following year it moved its head office to new premises at 43 Clerkenwell Road, London. This offered 16,000 square feet of space spread over three floors. Its former headquarters building on Oxford Street in London was retained as retail premises.<sup>175</sup> This expansion was a sign of the increasing level of business that the firm was conducting, principally with the amateur and snapshotter markets.

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<sup>173</sup> 'Trade', *The Photogram*, no. 65, vol. 6, May 1899, p. 158.

<sup>174</sup> Cosmos. 'Jottings', *British Journal of Photography*, no. 1894, vol. 43, 21 August 1896, pp. 533-534.

<sup>175</sup> 'Ex cathedra', *British Journal of Photography*, no. 1966, vol. 45, 7 January 1898, p. 1.



Much of this growth had come with the mass-sales of roll film arising from the introduction of the Pocket Kodak camera of 1895. The first batch of 3000 Pocket Kodaks shipped to Britain had sold out within a few days and sales of cameras continued to generate sales of film, which gave the company an increasing hold over the British photographic trade and chemist shops.<sup>176</sup> The Brownie camera was launched in 1900 was similarly popular with 50,000 being sold by Kodak Limited within Europe during its first year.<sup>177</sup> Sales of roll film soared and other manufacturers brought out imitations of these two simple roll film box cameras. To protect its sales of cameras and sensitised materials, and to maintain prices Kodak began to restrict the way that retailers could offer its goods and imposed increasingly strict conditions with regard to pricing. It also started to restrict the products from other manufacturers that retailers could offer alongside Kodak products.

#### *Price-cutting*

Price-cutting was a perennial issue for many manufacturers anxious to ensure that shops did not sell their products below certain levels. From the late 1890s Kodak began to take legal action against retailers which offered its goods below a fixed retail price.<sup>178</sup> It was able to enforce this by issuing a standard contract that all retailers had to sign which precluded price-cutting. One of the first retailers to feel this change in policy was the department store Gamages against which Kodak took legal action for price-cutting. Gamages had opened its first store in 1878 in Holborn, London, and by the end of the century it was offering a wide range of household goods that it would also supply by mail order. Photography was part of this expansion and a photography department was opened in 1899 with separate catalogues being issued that featured a wide range of amateur equipment. The validity of Kodak's new contract was upheld by the trial judge

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<sup>176</sup> Brian W. Coe, *Kodak Cameras. The first hundred years*, Hove: Hove Foto Books, 1988, pp. 28-30. The Pocket Kodak was extremely successful selling over 100,000 worldwide in its first year.

<sup>177</sup> Brian W. Coe, *Cameras. From daguerreotype to instant pictures*, London: Marshall Cavendish, 1978, pp. 89-90.

<sup>178</sup> For convenience the Eastman Photographic Materials Company Limited, i.e. the British company, will be referred to as Kodak. The American company will be referred to as Eastman Kodak.

who stated: 'it ought to be known by all manufactures and dealers that a form of invoice, with restrictions, or referring to restrictions, on a discount sheet, makes an effective contract'.<sup>179</sup> After a second case, involving Elliott and Sons, Kodak took further action and withdrew its goods from the two firms for selling its products below list price.<sup>180</sup> Both firms were fined £50. Kodak was forced to secure a court order restricting Gamages from committing further breaches of its conditions of sale in 1901.<sup>181</sup>

Enforcing fixed retail prices prevented retailers from undercutting competitors and particularly affected the larger retailers and department store. It effectively stopped them from offering discounts to customers and from cross-subsidising between different goods. Kodak's contract was effective, easy to apply and it offered some stability in the retail market by creating a level playing field between different retailers.

Kodak's next action that it took in 1901 was more draconian. The company began to require retailers selling Kodak cameras to only stock Kodak films and the consequence of this was more serious as it restricted the sale of competitors' products, limited consumer choice and reduced competition. Kodak justified its position publicly in a letter to the photographic trade where it claimed that 'but for the hundreds of thousands of our Kodaks in use there would be practically no trade in rollable film at all'.<sup>182</sup> Internally Kodak was concerned about the number of roll film cameras imitating their own, mostly of German origin, being sold in Britain passed off as Kodak products.<sup>183</sup> The issue prompted a furious correspondence in the photographic press from individual firms and the Photographic Trade Association publicly criticised Kodak's position. In

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<sup>179</sup> 'Kodak versus Gamage: Mr Justice Stirling's judgment', *British Journal of Photography*, no. 2046, vol. 46, 21 July 1899, p. 461.

<sup>180</sup> *British Journal of Photography*, no. 2073, vol. 47, 26 January 1900, p. 61.

<sup>181</sup> 'Kodak versus Gamage', *British Journal of Photography*, no. 2135, vol. 48, 5 April 1901, p. 222.

<sup>182</sup> 'Kodak, Limited, and the trade', *British Journal of Photography*, no. 2139, vol. 48, 3 May 1901, pp. 284-285.

<sup>183</sup> *Memorandum respecting the selling policy of Kodak, Limited in Europe*, Kodak Historical Collection, University of Rochester.

the face of Kodak's dominant position as a manufacturer and increasingly as a supplier of its own products, as well as wide public recognition of its goods, there was little that retailers could do.

Within a year Kodak revised its position and withdrew the terms of sale, substituting them for a revised discount structure. From January 1902 instead of giving an invoice discount of 20 per cent to the dealer on purchases of film, a discount of 12½ per cent was given with 15 per cent on cameras in lieu of the previous 25 per cent. This was boosted by a further rebate of 10 per cent and 12½ per cent respectively at the end of each month, provided the dealer was able to certify that since the 1 January 1902 he had not received, bought, sold, carried in stock, or disposed of any rollable film cameras, film holders or roll films other than those supplied by Kodak and that he had sold all goods in accordance with the conditions of sale. This remained in force until July 1903.

Kodak further entrenched its trading position when it advised through its *Trade Circular* for December 1901 and January 1902 that it was completely removing wholesalers from the distribution of its products and that it would begin selling directly to retailers on preferential terms including volume discounts. The company was still in dispute with retailers and it asked those receiving discounts and rebates to vote on the continuance of the scheme which, unsurprisingly, went against Kodak. As a consequence Kodak reintroduced a general discount on roll film of 25 per cent (increased from the previous 20 per cent) and 33.3 per cent on Kodak cameras (which previous ranged from 25 -10 per cent) regardless of the quantity ordered.

The position of wholesalers was completely undermined. The immediate financial impact was restricted to 'two or three large photographic houses and several firms of wholesale chemists and druggists' but it nevertheless provoked a furious response. The *British Journal of Photography* reported that:

At least two large firms have to our knowledge decided to take up the manufacture of rollable celluloid film and the importation of German-made cameras of the Kodak form will, it is stated, shortly take place in large numbers.

Thus there is every prospect of sharp competition in rollable films and cameras.<sup>184</sup>

It is difficult to identify precisely which firms were affected but Houghton, which had an extensive wholesale and retail business, and claimed to buy over £1000 worth of Kodak products a month, was certainly one. Kodak products were removed from its trade catalogues.<sup>185</sup>

The response from the larger photographic firms was swift. By March the principal British wholesalers: Barclay and Sons Limited, Busch Camera Company, W. Butcher and Sons, Jonathan Fallowfield, G. Houghton and Son, Marion and Company Limited, F. Newbury and Sons, John Sanger and Son, W. Sutton and Sons, and C. Tyler and England Brothers Limited, had joined together to act in countering Kodak's position. They established the Alliance Roll Film Company Limited, to manufacture cameras, roll film and sensitised materials and 'and to promote the sale thereof at reasonable prices to and through the members of the company'.<sup>186</sup> The large Manchester retailer James Woolley, Sons and Company Ltd joined shortly afterwards. Products made by one member of the group would be available through any of the other members and this began the move to two principal photographic groupings in Britain: Kodak and one based around Houghtons which would last up to 1939.<sup>187</sup>

The Alliance Roll Film Company was not a commercial success and at an extraordinary general meeting on 29 November 1904 it was resolved to wind up the company voluntarily. Its impact was longer lasting. Houghton merged with a number of smaller companies and established a major camera manufacturing factory was very successful

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<sup>184</sup> 'The Kodak company and wholesale dealers', *British Journal of Photography*, no. 2176, vol. 49, 17 January 1902, p. 41.

<sup>185</sup> Kodak products had appeared in Houghtons Ltd 1900 *Price List* but did not appear in their 1904-05 *Price List*; 'Kodak, Limited, and the wholesale dealers' letter from G. Houghton and Son, *British Journal of Photography*, no. 2176 vol. 49, 17 January 1902, p. 59.

<sup>186</sup> The National Archives, Kew, BT 31/9783/72884. The Alliance Roll Film Company Limited.

<sup>187</sup> 'Amalgamation of wholesalers', *British Journal of Photography*, no. 2187, vol. 49, 4 April 1902, p. 273.

and claimed to be the largest camera factory in the British Empire. It was mass-producing cameras in Britain long before Kodak established its own camera manufacturing facility in 1927. Houghton also developed its own range of roll film and sensitised materials, which were manufactured for it by Austin Edwards Limited of Warwick. W. Butcher and Sons stepped up the importation of cameras and photographic equipment from a number of German manufacturers which it sold under its own brand names. Other retailers, such as Jonathan Fallowfield, continued offering extensive ranges of Houghton products and only a minimal numbers of Kodak cameras up to 1914.

Kodak had its own distribution network and did not require the services of wholesalers, and it continued to pursue its own commercial objectives. Three weeks after the announcement of the establishment of the Alliance Roll Film Company it declared a reduction of up to 33 per cent in the retail price of its bromide and packet papers. It claimed that 'these important reductions cannot fail to greatly increase the popularity and use of bromide papers amongst all users of artificial light papers. It will prove a benefit to the photographic trade generally, and add a stimulus to the practice of enlarging'.<sup>188</sup> It was an aggressive step in winning market share and sales in an area where there were plenty of established manufacturers. Kodak claimed that the effect of removing the wholesalers 'was that they immediately proceeded to interest themselves in the imitations of our roll-film goods'.<sup>189</sup>

The issue of film sales and the way that competitors' films were sold continued to preoccupy Kodak and it carried on pursuing its policy of defending its products from imitation. In 1902 it won a court case against the Columbia Optical and Camera

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<sup>188</sup> *Photographic News*, no. 330, vol. 46, New Series, 25 April 1902, p. 269.

<sup>189</sup> *Memorandum respecting the selling policy of Kodak, Limited in Europe*, Kodak Historical Collection, University of Rochester. The position was hardly surprising as British manufacturers were not in a position to supply goods in the quantity that Kodak had done. Supplies from Germany and re-branded met some of the gap.

Company which had sold film not of Kodak manufacture but on Kodak film spools.<sup>190</sup> In the same year it started a court case against the London Stereoscopic Company and 'a dozen different actions against various persons' including the Houghton company for an interim injunction to restrain their sales of Kodak films.

Kodak objected to the practice of retailers selling competitors' films using the name of the Kodak camera it would fit. In Kodak's view this was tantamount to passing off non-Kodak film as Kodak film and it was proactive in getting the practice stopped.<sup>191</sup> Two court cases against the London Stereoscopic Company and George Houghton and Sons were heard in January 1903 in which Kodak claimed that that the words Kodak, Brownie, Bulls-Eye and the abbreviations PK, FPK, CK, and BE had been used to describe films that were not of their manufacture.<sup>192</sup> It added that the defendants 'had thereby infringed [Kodak's] several trade marks and passed off other goods as the goods of the plaintiff company'.<sup>193</sup> The evidence was heard over several weeks and judgment was given in February. The *British Journal of Photography* highlighted the case which it felt was the most important to have been heard since Talbot v. Laroche in 1854: 'no action has been brought before a British Court of Law which is of such great importance as those in which Mr Justice Swinfen Eady gave judgment on Wednesday morning last'.<sup>194</sup> The court found in favour of Kodak but as the *British Journal of Photography* noted:

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<sup>190</sup> 'Kodak, Limited v. Columbia Optical and Camera Company', *British Journal of Photography*, no. 2197, vol. 49, 13 June 1902, p. 478; *British Journal of Photography*, no. 2196, vol. 49, 6 June 1902, p. 455. The Columbia company was subsequently closed and the business sold off in October.

<sup>191</sup> 'Commercial and Legal Intelligence', *British Journal of Photography*, no. 2200, vol. 49, 4 July 1902, p. 537.

<sup>192</sup> These were abbreviations of widely recognised Kodak trade names referring to: PK – Pocket Kodak, FPK – Folding Pocket Kodak, CK – Cartridge Kodak, and BE – Bulls-Eye. Each of these was a type of popular amateur camera.

<sup>193</sup> 'Kodak Limited v. The London Stereoscopic and Photographic Company, Limited; Kodak Limited v. George Houghton and Sons', *British Journal of Photography*, no. 2231, vol. 50, 6 February 1903, pp. 107-109.

<sup>194</sup> 'Kodak Ld. v. London Stereoscopic and Photographic Company Ld. Kodak Ld. v. George Houghton & Sons', *Reports of patent, design, trade mark, and other cases*, no. 12, vol. 10, London: H.M.S.O., 1903, pp. 337-352.

The injunction granted... and retention of the plaintiff company's trade marks on the register simply amount to a confirmation of the latter firm's rights in certain words and letters, the value of which in these days it is very easy to over-estimate. Those decisions cannot stem the tide of British enterprise, or alienate the right of the British tradesman to purchase his wares in open market, and sell on his own terms. In other words, the manufacture of collapsible and box-form cameras will proceed uninterruptedly in British, German, Austrian, French and other factories, and roll films on spools to suit those camera will emanate from as many similar sources...The Kodak Company, having deliberately set itself against the trade, has naturally evoked, as we predicted would be the case two years ago, tremendous competition, which in its turn must inevitably be followed by a war of prices, a state of things which applies not only to America, but to England and the European continent.<sup>195</sup>

The Photographic Trade Association issued instructions to its members outlining what the trade could and could not do when selling films and how and when Kodak trade names could be used. They also advised the trade to 'Keep your trade open and free from restrictions. Stock everything which the public asks for. Do not become a tied house, but reserve your freedom to handle any maker's goods'.<sup>196</sup>

The reality was rather different reflecting the dominance that Kodak now had over the retail trade through enforceable contractual terms of business. Most small chemists and retailers soon adopted Kodak's terms of business and were effectively 'tied' to supplying its goods. Those that did not supply Kodak products generally supplied Houghton or Butcher products. There were only a very small number that supplied a mix of Kodak products alongside those from British and foreign manufacturers.<sup>197</sup> The *British Journal of Photography's* assessment of the impact on the trade was largely correct: camera sales continued to grow and roll film continued to be produced and sold

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<sup>195</sup> 'The Kodak case', *British Journal of Photography*, no 2235, vol. 50, 6 March 1903, pp. 183-184.

<sup>196</sup> 'Kodak, Limited, and the trade' correspondence from the Photographic Trade Association, *British Journal of Photography* no. 2236, vol. 50, 13 March 1903, p. 211

<sup>197</sup> This is based on a survey of pre-1914 photographic retailer catalogues. Kodak, Houghton and Butcher all offered catalogues of their goods over-printed with the local retailer's name which ensured that the content was restricted to their own or approved products. Fallowfield which published its own catalogues appears to have been able to supply a small number of Kodak products although mostly it offered those of British manufacturers. This position largely continued after 1918 with Kodak and the merged Houghton-Butcher supplying most of the retail trade. The strict pre-1914 segregation appears to have broken down slightly and some of the larger retailers were offering a greater mix of different manufacturers' products, including those of Kodak, in their own catalogues.

by different manufacturers, but whether competition brought down prices is questionable. Kodak was keen to maintain prices and other manufacturers whose film sales were much less than Kodak had no financial incentive to offer large discounts. I would argue that Kodak's position was reinforced by the court judgment and its position as a dominant, rather than monopolistic supplier, was at best unaltered and at worst was entrenched.

In May 1903 Kodak issued a booklet of its dealers in Great Britain which listed 3300 names, a number that no other supplier could match.<sup>198</sup> The company continued to take legal action against those infringing its trade names including large firms such as the Scottish-based retailer and manufacturer J. Lizars.<sup>199</sup> In 1906 Kodak sued J. Lancaster and Sons of Birmingham for infringing their Brownie trade mark after an agent requested a Brownie film and was supplied with an Ensign film.<sup>200</sup> Kodak remained proactive by sending agents into dealers to test their respect of the law.

#### *Wholesaling and retailing*

Kodak's move into general photographic wholesaling further eroded an area of business that although relatively new had been handled by other firms such as Houghtons and Fallowfield. A small number of manufacturers were not prepared to deal with Kodak and took a principled stand. Wellington and Ward, for example, declined to supply Kodak on wholesale terms with their products stating 'our chief reason being that they have forced restrictive conditions of sale on a large section of dealers in the endeavour to secure a monopoly'.<sup>201</sup> Most companies had fewer qualms as Kodak's dominance and

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<sup>198</sup> 'Kodak dealers', *British Journal of Photography*, no. 2244, vol. 50, 8 May 1903, p. 371.

<sup>199</sup> 'Kodak versus Lizars', *British Journal of Photography*, no. 2260, vol. 50, 28 August 1903, pp. 698-699.

<sup>200</sup> 'Commercial and legal intelligence', *British Journal of Photography*, no. 2426, vol. 53, 2 November 1906, p. 877. Ensign films were supplied by Houghtons Ltd. This completely disregarded the 1902 court case. A further action was reported against W. G. Grenville, a Birmingham dealer, in 1908 again for passing off Ensign films as Kodak.

<sup>201</sup> 'Commercial and legal intelligence' in *British Journal of Photography*, no. 2250, vol. 50, 19 June 1903, p. 489.



ability to supply goods throughout Britain was too attractive, especially for small companies such as the Pocket Photography Company Limited, which noted that it had 'come to an arrangement with Kodak, Limited, whereby they undertake the sole wholesale supply of their Pocket Dark Room'.<sup>202</sup>

Location	Date opened / operating
<b>Retail shops</b>	
115, Oxford, Street, London	1888-1932
60, Cheapside, London	1897-1941
171-173, Regent Street, London	1898-1919
40, Strand, London	1901-1925
1-2 Gracechurch Street, London	1911-1932
65 Kingsway, London	1911-1971
96, Bold Street, Liverpool	1900-1917
45, Corporation Street, Birmingham	1911-1953
34 Grainger Street, Newcastle	1912-1929
72, Buchanan Street, Glasgow	1900-1920
83, Grafton Street, Dublin	1903-1959
<b>Branches and (*) Wholesale depots</b>	
Glasgow (*)	1900
Newcastle (under the Hurman name)	1903
Dublin (under the Hurman name)	1903
Birmingham (under the Human name)	1903
Liverpool (*)	1900

Table 13. Kodak shops and branches to 1914. *Source: Compiled from data in Gauntlett, 1978 and the photographic press.*

Other companies enhanced their own wholesaling operations to meet Kodak's threat to their business. Houghtons Limited and Jonathan Fallowfield began issuing circulars to their customers and the former somewhat optimistically claimed 'we are the largest wholesale photographic retailers in the United Kingdom, if not in the world'.<sup>203</sup>

Houghtons opened a Glasgow branch in 1905 to compete with Kodak's principal branch

<sup>202</sup> 'Commercial and legal intelligence' in *British Journal of Photography*, no. 2269, vol. 50, 30 October 1903, p. 874. The National Archives, Kew, BT 31/10133/75938, The Pocket Photography Company Limited.

<sup>203</sup> 'News and notes', *British Journal of Photography*, no. 2288, vol. 51, 11 March 1904, p. 217; 2294, vol. 51, 22 April 1904, p. 343.

outside of London which it had opened in 1900.<sup>204</sup>

To further enhance its position Kodak moved more strongly into direct retailing (see Table 13). It extended the number of retail outlets that it had in London and opened others in several of Britain's major cities. These were not simply for retailing to amateurs they also acted as a base from which to distribute goods wholesale. For this reason Kodak operated some of these under the Hurman name, a company it had purchased to support its wholesale activities in a discrete way.

Kodak's aggressive stance against the rest of the wholesale and retail trade achieved its aims in terms of improving sales. It also had the effect of alienating the wider photographic trade even if much of it had to continue dealing with it. George Eastman sent Charles S. Abbott from Rochester, New York, to London in 1902 to develop the sales programme and to improve business relations with the trade which George Davison had done much to antagonise. Abbott, whose background was in advertising, had come to Eastman's attention when Kodak purchased the American Aristotype Company and was Eastman's designated heir apparent. He brought new American ideas to the marketing of photographic goods and did much to mend fences with the wider business. His early death in 1905 was a significant blow to Eastman.<sup>205</sup>

For the remainder of the period to 1914 Kodak remained firm in the protection of its markets and in the way it conducted business. After 1902 it did adopt a more constructive relationship with the trade generally although it did little to relax its stance on price-cutting, the role of wholesalers and the tying of photographic retailers to its products. The legacy of the aggressive pursuit of sales of the early twentieth century meant that Houghtons Ltd, and W. Butcher and Sons Ltd, never included Kodak films or cameras in their catalogues and the two firms which Kodak had effectively pushed

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<sup>204</sup> 'News and notes', *British Journal of Photography*, no. 2332, vol. 52. 13 January 1905, p. 37.

<sup>205</sup> Margaret D. Gauntlett, *A history of Kodak Limited*, Harrow: unpublished manuscript, 1978, p. 15; Elizabeth Brayer, *George Eastman. A biography*, Baltimore: The John Hopkins University Press, 1996, pp. 242-243.

together combined their manufacturing in 1915 and fully merged in 1926. Kodak had, in effect, contributed to the development of large-scale photographic manufacturing in Britain and had brought in to being a significant competitor.<sup>206</sup>

## Summary

The dealer's importance to the photographic consumer grew rapidly from the later 1870s and throughout 1880s. The growth in their number was a response to the rapidly increasing demand for photographic goods from the amateur and, especially, from the snapshotter. The professional market, other than for sensitised materials, was largely static during this period. Growing economic prosperity for middle and working classes combined with more clearly defined working weeks and increased leisure time translated into growing numbers seeking to record their excursions and families. The growth of camera club membership signified the growth of photography as a hobby, with the aim of creating technically competent and artistic photographs.

The effect of these trends was to change the relationships operating within the photographic industry. The growing retailing sector supported the increased separation between the photographic manufacturer and consumer. This was aided by a more clearly defined distribution network of goods via a limited number of wholesalers. The entry of non-specialist photographic retailers that added photography to a larger business made photography more widely accessible. As the relationship between the consumer, manufacturer and retailer developed over this period so new marketing techniques were adopted that saw advertising expand, new methods introduced and, for the first time, particular market sectors actively targeted.

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<sup>206</sup> *Photographic Price List 1914*, London: Houghtons Ltd, 1914. Houghtons 1086-page catalogue of 1914 included some products from other manufacturers but it concentrated on cameras made in its own factory and its own-branded films and plates which were made for it by Austin Edwards in Warwick. W. Butcher and Sons Ltd. 1914 catalogue similarly excluded Kodak cameras and films. Elliott and Sons Barnet films were included along with its own branded cameras many of which were imported from Germany.

By the turn of the century, in a market occupied by a large number of retailers, the development of brands played an increasingly important role. Kodak attempted to ensure that its products were retailed without competing products present in the same premises through increasingly restrictive terms of sale. The rest of the industry responded to this by trying to compete head on but it was largely unsuccessful in establishing a rival system able to compete directly with Kodak which had established a direct relationship with retailers, bypassing established wholesalers, and set up a network of its own shops.

The general state of the market for photographic materials was described by the economist Henry Macrosty in 1907. He described a situation where the prices of photographic materials were all protected and there was no price-cutting. He noted:

A great deal of the trade...consists of novelties which may or may not be improvements but are always being substituted for the older examples of their class, and there is a large and increasing number of manufacturers. The makers are therefore under every inducement to compete among themselves, using every form of advertisement to ingratiate themselves with the public; in this campaign established reputation is a great factor. The goodwill of the retailers is ensured by handsome discounts off the fixed list retail prices – generally 20 to 25 per cent for plates, 33 1/3 per cent for papers, 15 to 30 per cent for other goods.<sup>207</sup>

He saw Kodak's efforts to limit the selling of competitors' products in 1901 as an American practice but one, alongside its attempt to takeover Ilford Ltd, as an attempt to take market share. He noted that 'competition in the photographic trade is far from being extinct, but it is confined to quality and does not take the form of price-cutting by retailers'.

By 1914 there were two dominant wholesale networks run by Kodak and Houghton both of which handled a range of British and foreign-made products and largely,

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<sup>207</sup> Henry W. Macrosty, *The trust movement in British industry. A study of business organisation*, London: Longmans and Co., 1907, pp. 223-224.

although not exclusively, avoided handling each other's products. The majority of small photographic retailers and chemists dealt with one or other company. Only the largest and non-specialist retailers such as department stores were in a position to select goods from each firm. There were also independent wholesalers although their number remained small.

## **Chapter 7. Conclusions**

### **Introduction**

The broad story of the development of British photographic manufacturing and retailing is one of initial slow growth, followed by a period of more rapid growth during the 1850s. After this it levelled off and then experienced a period of rapid growth from the late 1870s, before this growth slowed in the years immediately before 1914. The detail is rather more complex and made more so by the presence of technological change, economic and social change and a growing demand from the general public for an easy way to make photographs. The interpretation of that detail is made difficult by a lack of substantive data. The narrative approach adopted is the result of the absence of quantitative data and a necessary reliance on the photographic press of the time discussed for much of the evidence presented here. Material from the journals has been underpinned by newly available and re-discovered statistical data that informed the preceding chapters.

### *Chapter summaries*

Chapter 3, which examined the early period from 1839 to the early 1870s, placed the arrival of photography within wider historical scientific contexts. The initial perception of photography as a scientific curiosity encouraged its take up mainly by philosophical instrument makers, opticians and chemists. They became the initial retailers and then, from 1841, the manufacturers of photographic equipment and the materials needed to operate the daguerreotype and calotype processes. There was a great deal of overlap between the instrument makers who were first able to manufacture apparatus and the chemists with their ability to source and supply the chemicals, particularly silver nitrate, required for photography. In all cases photography was added to existing businesses and for some it became the largest part of the business. By the late 1840s increasingly specialised firms where photography represented the major part of the business had

developed responding to the growing demands for apparatus and materials from commercial portrait studios using the daguerreotype process and a limited number of amateur photographers operating the calotype process. These firms continued with the prevailing business types of the period: the sole trader and partnership. By 1850 there existed a growing number of specialist photographic manufacturers and retailers, with a group of London camera makers associated with Thomas Ottewill being the most important.

The introduction of wet collodion in 1851 together with a further two year period during which improvements were made produced a commercially viable photographic process. This acted as a catalyst in increasing the numbers of portrait studios and amateur photographers from 1853/54. The significant commercialisation of photography with the introduction of ready prepared collodion and papers helped the growing amateur market, although photography continued to be a challenging leisure pursuit. Thus the greatest area of demand remained with the portrait studios.

This expanding market began to support specialist retailers and 'photographic warehouses' able to find sufficient business to support them. For much of the period, though, many small manufacturers continued to undertake their own retailing. From the early 1850s most marketing undertaken by photographic businesses was concentrated on simple advertising and the issuing of trade catalogues with exhibitions, medals and endorsements being used to enhance individual firms' status. By the mid-1860s photography was fully established as a commercial occupation and an amateur pursuit but the lack of any significant improvements with its chemistry and considerable practical challenges, particularly for the amateur, resulted in a decline in the numbers practicing it.

This decline was reversed with the introduction of the dry plate from 1871 which had the effect of expanding the market, much as the wet collodion process had done in the 1850s. Chapter 4 explored this and provided evidence for the large expansion in the number of photographers. The impact of dry plates on commercial portrait studios was

limited but the number of amateur photographers grew significantly and, most importantly, it also led to the introduction of a new market: the snapshotter. Dry plate manufacturing was largely a cottage industry but a number of firms began to refine and mechanise their manufacturing methods in order to increase production. This allowed them to meet burgeoning demand and to remain competitive in a dynamic market. The introduction of dry plates, which by the end of the 1870s had been generally accepted by commercial studios and amateurs as superior to wet collodion plates, had an impact on camera design. The introduction of the detective or hand camera was the direct result of the introduction of the dry plate and most manufacturers introduced designs to the market. The arrival of the Kodak camera in 1888, celluloid roll film from 1889, and particularly the Pocket Kodak camera in 1895 and Brownie camera in 1900 further supported the amateur and snapshotter markets and boosted demand for photographic goods.

The major jumps in photographic chemistry were supported by important changes elsewhere. The mechanisation of plate manufacturing and camera production allowed manufacturers to meet amateur and snapshotter demands and had the consequential benefit for the consumer of bringing down their cost. Patent activity, which allowed inventors to profit from technical innovations, grew dramatically with new legislation and with the expansion of the market for photography, which offered the potential to make or license products. With growing numbers of manufacturers of apparatus and sensitised materials the industry began to standardise its output to support changes in manufacturing and the requirements of consumers. For cameras and equipment this mainly happened at an individual business level, for photographic optics there was wider standardisation of flanges, and for sensitised goods the introduction of new emulsions necessitated the adoption of a standard way of measuring their sensitivity. The assignment of Hurter and Driffield numbers was a major step forward in ensuring photographers could use their cameras with greater confidence by providing plates and films of a known sensitivity. Beyond photography there were social and economic changes within Britain that gave the snapshotter from all social classes greater disposable income and leisure time and benefited photography.



Chapter 5 described the arrival of Kodak in Britain and a period of consolidation in manufacturing up to 1914. Kodak's efforts at restricting competitors' activities and its attempted takeover of the plate and paper manufacturer Ilford Ltd were part of a deliberate strategy for dominating the British sensitised materials industry. The period was marked by the continued growth of sensitised goods produced by fewer larger firms. These were increasingly limited liability companies that were able to raise capital to build and operate large factories. The number of small camera and apparatus manufacturers declined and mass-production was concentrated in the hands of Houghtons Ltd from 1904 and a number of other firms. Foreign imports began to make significant inroads in to the British market, particularly from Kodak in the United States and by other American and German manufacturers who sold their goods directly or allowed British firms to re-label them with their own names.

The wider changes in retailing in Britain from the 1880s coincided with the growth of the mass market for photography and were described in Chapter 6. The rapid increase in numbers of snapshotters and amateur photographers led directly to an increase in photographic retailing on a previously unseen scale. Large numbers of specialist photographic retailers opened and from the 1890s there was the widespread entry of non-specialist photographic retailers such as chemists and department stores selling cameras and films, as well as associated services such as developing and printing. The shop itself was no longer associated with the manufacturer's premises but was dedicated to the display of goods to attract customers. Large shop windows were used for elaborate displays and the shop interior presented goods for inspection. The separation of manufacturing from retailing required the establishment of wholesalers to distribute goods. Some of the larger retailers continued to supply goods to other firms but a new class of dedicated wholesaler appeared for the first time.

At the same time marketing also evolved. The photographic press expanded to meet the needs of growing numbers of amateurs, advertising evolved and the trade catalogue grew offering a more effective way of selling goods. In addition, new methods were

added such as the publication of company house magazines. Trade was encouraged through the participation of manufacturers and retailers at numerous exhibitions organised by camera clubs and trade bodies. Firms introduced paid representatives to travel to retail outlets to promote goods and to solicit orders, and testimonials and endorsements were employed more extensively than they had been in the past. The firm as corporate entity was supported by the use of trade marks and branding across advertising, packaging and publications.

In response to the greater competition for business and the falling price of photographic goods Kodak prohibited retailers from cutting the price of its goods and introduced new conditions of business to tie retailers to its products at the expense of competitors. Kodak also undertook the wholesaling of its products and dealt directly with retailers and customers. As a consequence, a number of British manufacturers joined together to counter this move which eventually led to two large firms – Kodak and Houghtons - dominating the supply of photographic goods and materials to retailers.

By 1914 the demand for photographic equipment and materials was dominated by the snapshotter and amateur with the market from commercial studios relegated to a comparatively minor role. The manufacturing of equipment was split between a small number of firms mass-producing products for the amateur and snapshotter, and imports from Kodak and smaller British companies for satisfying niche markets. For sensitised materials large firms were supplying the bulk of the market for plates, films and papers. Retailing was being undertaken by a variety of specialist and non-specialist businesses mostly supplied by two firms and a small number of independent wholesalers.

### **Answering the Introductory questions**

In Chapter 1 a number of questions were posed and there is now an opportunity to answer them based on the evidence and narrative given in Chapters 3 to 6. Evidence in Chapters 3 and 4 provide answers explaining *the role of technological change*. The

three key changes for photography all involved the transition from an existing photographic process to a new one offering significant advantages for the photographer. The first was the move from the daguerreotype and calotype to the wet-collodion process shortly after 1851. As with most new technologies this adoption did not happen immediately but within a few years the advantages of the collodion process had been recognised by both commercial portrait studios and amateur photographers. The daguerreotype in Britain was consigned to obsolescence and although the calotype remained in use by some amateurs into the early 1860s it, too, was overtaken.<sup>1</sup> The second was the move from wet collodion to dry plates from the early 1870s. Again, this was not an immediate transition. The initial introduction of dry plates offered few advantages for commercial portrait studios and it was not until improvements in their quality and sensitivity in the late 1870s that there was a rapid take up by commercial studios. By 1879 the majority of photographers were using dry plates. There was a third change, significant for one sector of the market, which addresses the question *how important was the move from glass plates to roll film for the amateur?* The move from photographic sensitive emulsions coated on to glass to coating it on to cut sheets and rolls of celluloid had little effect on the commercial and amateur markets until the early twentieth century. It was absolutely crucial for the take up of photography by the snapshotter. This change underpins the next question: *how relevant was the decrease in the physical size of the camera?* Chapter 4 explored the benefits of celluloid which offered lightness and was robust when compared to glass. Roll film supported the move, which had started with the dry plate, to smaller and lighter hand cameras which found a ready mass market from 1895. Incremental improvements in emulsion sensitivity helped the development of less complex cameras that would take acceptable photographs when used by a snapshotter under prescribed conditions.

The question of *the relative importance of the professional, amateur and snapshotter markets for photographic goods and how this changed over time* was addressed in each

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<sup>1</sup> In the United States the daguerreotype which had always enjoyed greater popularity coexisted with wet-collodion processes for a longer period.

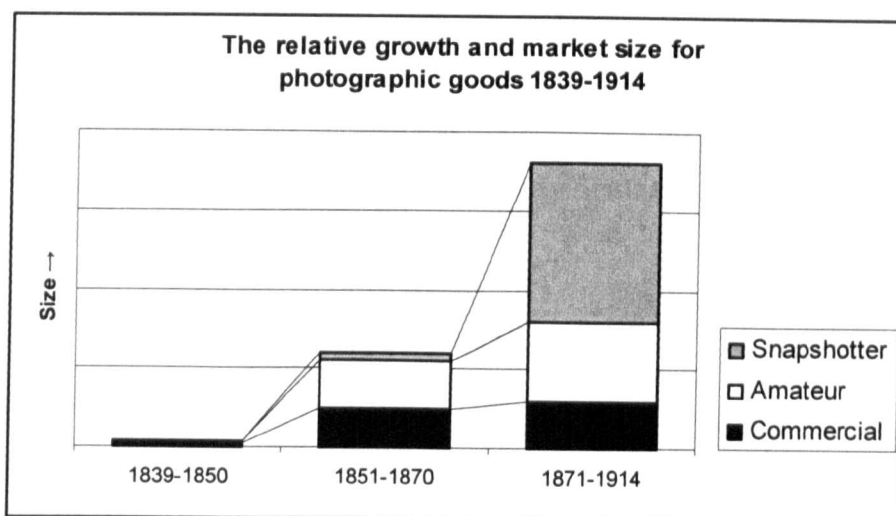


Figure 19. The relative growth and market size for photographic goods 1839-1914.

of Chapters 3, 4 and 6 which looked at the early, middle and later periods respectively. The relative positions throughout each period are summarised in Figure 19.

Although definite numbers for snapshotters are impossible to determine for the period up to 1914, the relative growth in their number from 1871 to dominate the market for photography is the single most important consumer trend up to 1914. Without this growth, which was a consequence of new ways of supporting photographic emulsions and the growth in disposable income and leisure time, it is unlikely that the industry would have introduced mechanisation to support mass production and new ways of retailing goods to this market.<sup>2</sup> The separation of picture-taking from the processing and printing of the photograph was a significant step in supporting Kodak's 'unskilled

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<sup>2</sup> A useful comparison is the market for scientific instruments which experienced no mass demand for its products and consequently remained small with only the limited employment of mechanisation within manufacturing.

amateur'.<sup>3</sup> The question of *the importance of photographic retailing on the consumer* was addressed for the early period in Chapter 3 and for the later periods in Chapter 6. There is little doubt that the new ways of retailing from the 1880s was essential in providing a structure for manufacturers to distribute their products and directly supporting consumer demand.

## Summary

The broad themes of this study as previously summarised in Figure 1 (on page 16) have been described and their importance discussed in the context of consumer demand. I have shown that in each of the three key periods, the early 1850s, the 1870s and 1890s, latent consumer demand was catalysed through the introduction of new photographic technology: wet collodion, dry plates and celluloid roll film respectively. That demand was modest in the 1850s but by the 1870s and 1890s it was far more substantial aided by greater personal wealth and leisure time. The concept of that demand's latency is a key one for this study. At key points throughout the nineteenth century in the 1850s and 1870s and 1880s the arrival of a key technological change was able to meet that demand. Changes in manufacturing methods, retailing and marketing, while significant for their effect on the industry and the consumer, supported the photographic industry in meeting this demand. Except for the impact of mechanisation on bringing down prices these other changes did not directly enhance demand.

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<sup>3</sup> United States District Court. *The United States of American vs. Eastman Kodak Company Supplemental Brief and Argument for Defendants*, James J. Kennedy, William S. Gregg, S. Wallace Dempsey, May 1915. p. 2-3. Kodak defined photographers as: professional – studio, commercial; amateur - skilled photographers who have the professionals knowledge but do not use it for profit; skilled amateurs – who do, and are competent to do, their own developing and printing; and unskilled amateurs or novices (including children) who know nothing about photography, and do not want to know anything about it, but practice it merely to the extent of pointing the cameras and pressing the button. It claimed this last group constituted 'nine-tenths of the army of amateur photographers'.

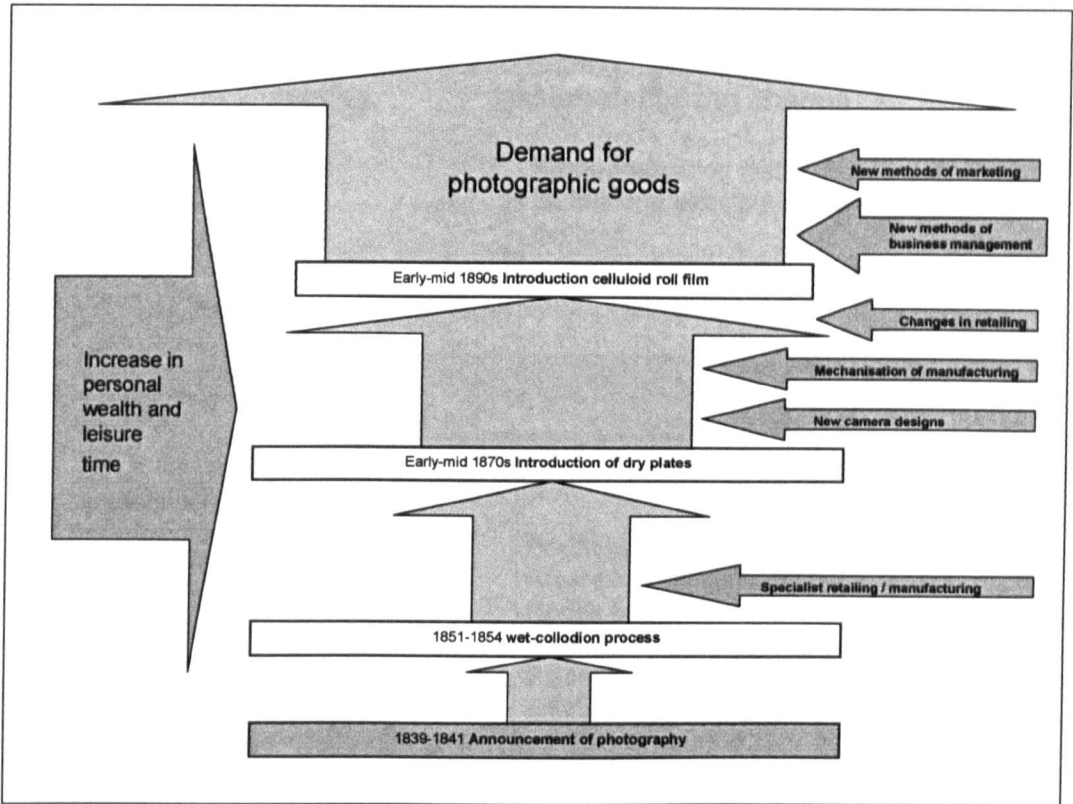


Figure 20. Summary of the key factors influencing the demand for photography between its introduction in 1839 and 1914.

Figure 20 summarises these conclusions and emphasises the critical role that technological change played in the early 1850s, 1870s and 1890s which was supported and enhanced by changes in retailing and marketing, mechanisation, changes in camera design and the general improvement in personal wealth and leisure time amongst the working and middle classes. Within some of these there were further benefits, for example, from changes in the patent system and absence of a patent on the wet collodion process which helped technical improvements; in areas of retailing and marketing where the trade catalogue provided a crucial link to consumers and facilitated the ordering of goods from manufacturers and retailers; and changes in business organisation and structure which supported new ways of bringing in capital to facilitate mechanisation and growth.

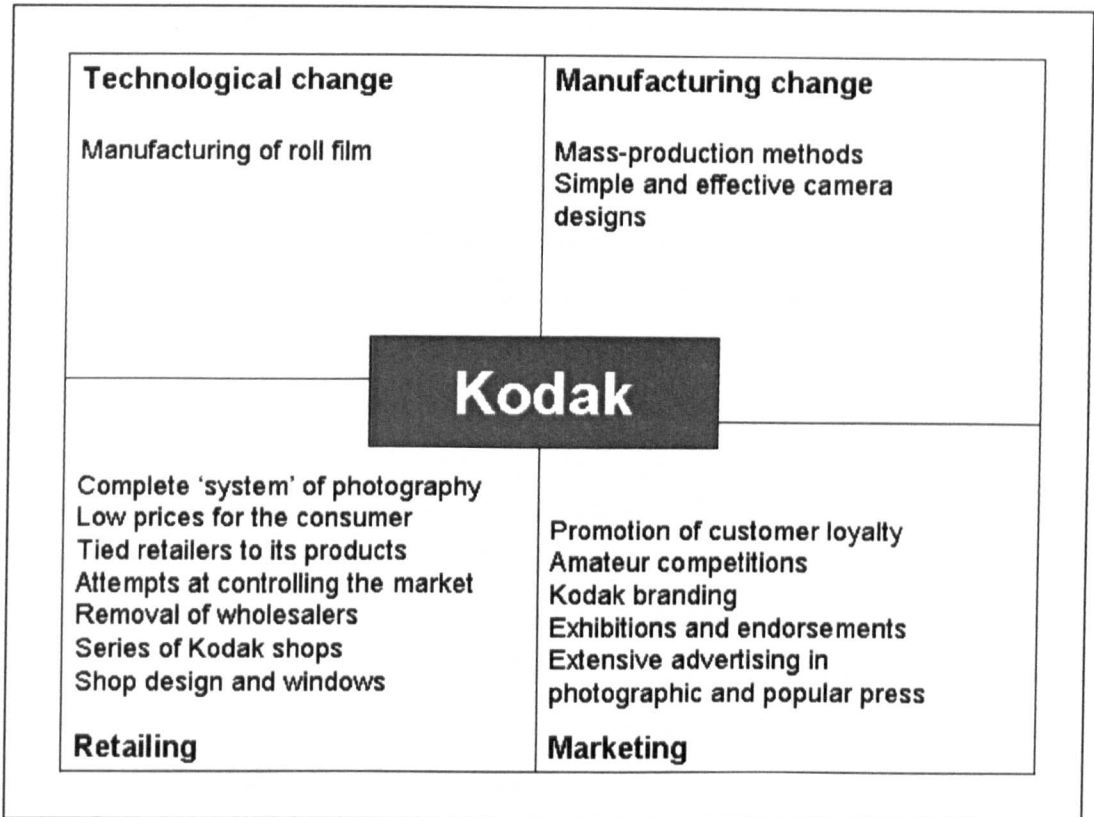


Figure 21. The impact of Kodak on the main areas of focus for this study.

From the mid-1880s until the end of the period of this study Kodak's position as an agent of change in areas of camera design and technical improvements and especially in retailing and marketing methods played a key role in transforming the British retailing photographic industry. Figure 21 highlights these and the fact that Kodak's main impact was on the retailing and marketing of photographic products. The commercial introduction of roll film at a price that was both affordable and competitive supported this, and Kodak's role as a manufacturer of roll film ensured that profits were returned to the company. It is arguable whether the British industry, without Kodak's aggressive positions, would have responded to growing amateur and snapshotter demands in the way that it was forced to do. Kodak's awareness of the snapshotter market and the company's ability to respond to it and to meet its demands was unique among

photographic manufacturers at this time. British manufacturers and retailers followed its lead.

In conclusion, the introduction of seminal photographic processes and sensitised materials was responsible for meeting a latent demand for photography which existed until the 1880s after which it was more explicit. The photographic industry was able to meet a steadily growing demand from commercial studios and amateur photographers although by the 1880s volume production was increasingly required. After this there were only small incremental technical improvements. The demands of the mass snapshot market were not met until Kodak introduced roll film and a complete 'system' of photography at modest prices in the mid-1890s. This had the greatest effect on the development and growth of the British photographic industry of which Kodak was a significant participant. The role of marketing and selling photography by creating a demand for photographic equipment and sensitised materials to a mass market assumed greater significance than hitherto.



## **Postscript**

I introduced this thesis by claiming that it offered a new history of British photography and I believe that remains true. The previous chapters describe a history and include a substantial amount of new information which delineate the key themes impacting photographic manufacturing and retailing over the period. There is less reason now for other photographic historians and those discussing the photographic image to overlook the manufacturing and retailing aspects of photography when they undertake their own work. At the same time I also recognise that the research presented here is only a beginning.

This work here lays the groundwork for other researchers to develop and extend further. Inevitably, perhaps, there will be revisions and additions to the conclusions I have drawn and several areas offer the potential for a more detailed examination in their own right. There are a number in particular which would warrant further work and I suggest several below:

- The early period from 1839 to the mid-1850s. The relationship between photography and scientific instrument makers was crucial to the start of photographic manufacturing. The identification of which companies were involved with both areas and how they operated would warrant further investigation;
- The technical development of sensitised materials, particularly the dry plate in the 1870-1890s, and how these were translated into commercial products;
- The impact of Kodak on the British photographic industry and on the consumer from 1885 and after 1914.

Furthermore there still exists a great deal of work to do on wider aspects of British photographic history: the development of the photographic studio, the role and impact

of stereoscopy and the growth of the camera club are just three which could be usefully considered.<sup>1</sup> A continuation of this study considering manufacturing and retailing in the post-1918 period up to the 1970s now becomes less daunting and has a resonance with wider aspects of British industry. I would expect that some of the research undertaken for this study may well support some of these.

Personally, the data I collected for this study which appears herein and, more importantly, that which was not used will find its way into the public domain through publications and possibly an online database. I am also expecting to start new work on at least two of the areas noted above.

Michael Pritchard<sup>2</sup>

March, 2010

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<sup>1</sup> De Montfort University's MA in Photographic History and Practice which started in October 2009 will be instrumental in developing the future direction of research in to photographic history in Britain.

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