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Science and the Timeliness of Reproduced Photographs in the Late Nineteenth-Century Periodical Press

James Mussell

Mary Howarth's short story "The Telegram," published in the *Pall Mall Magazine* in 1896, is unusual as it is a piece of fiction illustrated by a series of photographs that were interspersed with the letterpress. The story begins with two friends by a cosy fireside: Horace Keith, whose father owns the (fictional) radical daily *The Meteor*; and Laurence Morris, a painter who is about to depart on a commission to paint a portrait of the Prime Minister. The portrait has been delayed as the Prime Minister has been ill and Keith asks Morris to telegram him immediately should the Prime Minister die so *The Meteor* can run the exclusive. Keith's father, the owner of the paper, is the Prime Minister's estranged half brother and, by coincidence, is also in Brighton having just finished a rather spiteful obituary of the Prime Minister before leaving London. Horace Keith receives the telegram from his artist friend Morris saying the Prime Minister is dead and so runs the obituary by his father in a special edition. However, the telegram has been mistranscribed and the Prime Minister and Keith's father are at that moment resolving their differences in Brighton. Laurence Morris, having finished his portrait, returns to London and, seeing the notices of the Prime Minister's death, quickly realizes the error. When the news of the Prime Minister's supposed death reaches Brighton, Horace Keith's father realizes that his spiteful obituary of his brother will have been published and, feeling that he has betrayed him, rushes back to the Prime Minister's hotel.

Luckily, the Prime Minister died shortly after Keith's father had departed, and so passed away oblivious to the debacle.[1]

Howarth's story illustrates the new temporal and spatial configurations created by late nineteenth-century socialization of information technology. The telegraph offered the potential for the instant transmission of linguistic information. Whereas before, Brighton would always be a few hours train journey from London, the telegraph enabled Brighton time and London time almost to co-exist. However, as the story indicates, the points of translation, where words become electric signals and then words once more, was not a completely reliable process. In the newspaper office Barton, the experienced "working secretary," warns against using telegrams without getting them repeated. For Barton (and indeed Keith's father), the chain that links the telegram to its source is not stable, but for Horace Keith, a mercurial representative of the next generation, "all the laws of sequence are against its being inaccurate."[2] It is the failure of the process to function fluently that produces the curious situation where the Prime Minister is dead in London but alive in Brighton. This temporal disjunction, violating the laws of sequential linear time, does not last for long: as the story unfolds, and news begins to reach Brighton, the Prime Minister actually does die, bringing the two temporalities together once more.

The choice of photographs to illustrate the story was both apt and unusual. Just as the instant transmission of information by the telegraph signalled the co-presence of distant spaces, so the photograph captured in a mobile, reproducible form a moment when the camera and scene photographed were brought together in time and space. Howarth's "The Telegram" brings both of these conceits together: the story tells of what might happen should information be

[1] Mary Howarth, "The Telegram," *Pall Mall Magazine*, 6, July 1895 (1895), pp. 355-364.
[2] Howarth (1895), p. 357.

communicated inaccurately, creating a disjunction between two spaces at the same time; the photographs appear to show the events actually happening, positing a documentary record of them that can also be recovered at the moment of reading. As the story is manifestly fictional – it is presented as a short story; its prose style is fictive; and although readers might accept the existence of Keith, Morris and *The Meteor*, they certainly knew the Prime Minister had not died – these photographs do not show the events happening, but rather a simulation of them. The role of the photographs is the same as they still gesture to precise events in space and time, it is just that these space-times, and the events occurring within them, are fictional.

What is unusual about "The Telegram" is that it used photography at all. The success of the *Strand Magazine* in 1891 had demonstrated both the practical advantages of using photographic methods in the press and the demand for photographs among readers.[3] Although the *Pall Mall Magazine*, at 1s 6d, was three times the price of the *Strand*, it was clearly based upon the older monthly for its form. From its launch in 1893 the *Pall Mall Magazine* exploited a similar combination of serial articles and high quality illustration, but attempted to market its miscellany to a more niche, high-art market. As an imaging technology, photographs were common throughout the century in a variety of forms; however, it was only in the 1890s with the co-emergence of photographic reproductive technologies and cheap sources of high-quality paper that their use proliferated in the periodical press.[4] Both the *Strand* and the *Pall Mall Magazine* employed half tone photographic reproduction to bring images in a range of media onto the page.[5] The pages of these magazines thus offered readers a rich repertoire of techniques, mixing line drawings

[3] For the *Strand Magazine* see Reginald Pound, *The Strand Magazine 1891–1950* (London: Heinemann 1966) and Kate Jackson, *George Newnes and the New Journalism in Britain 1880–1910* (Aldershot: Ashgate 2001).
[4] See David Reed, *The Popular Magazine in Britain and the United States, 1880–1960* (London: British Library 1997)
[5] See George Newnes's account of this in the *Strand*: anonymous, 'A Description of the Offices of the *Strand Magazine*', 4, December 1892 (1892), 594–606.

with engravings and photographs. As each method of imaging had its own history and politics, as well as practical demands in production, they tended to be used for specific purposes. For instance, each number of the *Strand* would open with a high-quality engraving, often depicting a dramatic episode from a series of short stories currently running; however, the stories themselves tended to be illustrated with cruder engravings or pen and ink illustrations. Photographs were rarely used for fiction because of their claims to authenticity: although they were not necessarily considered realistic because of their well-recognized partiality (i.e. they capture an image from one specific place at one specific moment and rendered colour monotone), photographs insisted upon the presence of the camera alongside the scene that it recorded. This necessary co-presence in time and space made photography impractical for fiction and, as the mechanical and chemical aspects of photography were stressed, it became increasingly understood as a medium that operated with minimal human intervention.[6] By the late nineteenth century photography was well established as a scientific instrument in its own right and skill with the camera was predicated on the same terms as any other scientific instrument: i.e. the operator should only act to allow the phenomena or event to record itself.[7] This mediated sense of objectivity, in which human agency was elided in deference to mechanical action, meant photographs were employed in the press to grant the reader access to an event that had happened in the (recent) past, leaving older imaging techniques to signal the imaginary and the old.

This chapter investigates the relationship between photography, science and time in the late nineteenth-century periodical press. Using examples drawn from popular scientific and non-scientific monthlies, I argue that both science and photography were used to invoke a sense of

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[6] See Jennifer Tucker, *Nature Exposed: Photography as Eyewitness in Victorian Science* (Baltimore: Johns Hopkins University Press 2005).
[7] See my *Science, Time and Space in the Late Nineteenth-Century Periodical Press* (Aldershot: Ashgate 2007), especially pp. 27–60.

simultaneity that, in turn, structured an imagined present. Not only did science and photography offer access to otherwise distant and inaccessible realms, but photography provided an alternative way of visualizing scientific phenomena, providing access to things that were usually the preserve of those privileged enough to have advanced instruments and specialist knowledges. Equally, scientific figures and events could be enrolled as part of narratives of progress that posited the present as the culmination of the past. Although the status of science was often a contested subject, especially when compared to the progress of science in rival nations, photographs of scientific phenomena and events were widely used to celebrate achievements.[8] The modernity of photography and science, brought together in the publication of scientific photographs and photographs of science, was thus a key resource through which periodicals could market the present.

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Periodicals, as Margaret Beetham amongst others has stressed, are objects that consist of heterogeneous components.[9] They are necessarily fragmentary, with all their various parts gesturing to a range of times and spaces. As Beetham writes, the "reader is addressed as an individual but is positioned as a member of certain overlapping sets of social groups; class, gender, region, age, political persuasion or religious denomination – to name only the most important."[10] However, to simply deploy a politics of identity was not enough: publishers and editors targeted the spaces and times of reading as a way to subdivide and open up new audiences. Readers did not just purchase according to their social position, but rather

[8] For instance see Roy M. MacLeod, "The 'bankruptcy of science' debate: the 'creed of science' and its critics, 1885–1900", *Science, Technology and Human Values*, 7 (1982), 2–15.
[9] Margaret Beetham, "Towards a Theory of the Periodical as a Publishing Genre," in *Investigating Victorian Journalism*, ed. by Laurel Brake, Aled Jones and Lionel Madden (London: Macmillan 1990), pp.19-32.
[10] Margaret Beetham, "Open and Closed: the Periodical as a Publishing Genre," *Victorian Periodicals Review*, 22 (1989), p.99.

according to the various cultural roles that they performed (or wished that they performed) throughout their daily lives. Readers might perceive of themselves as part of the imagined mass of the New Journalism while travelling to work, before reconceiving of themselves as part of another social configuration within domestic space in the evening. Mark Turner suggests that media historians need to "find out exactly for whom particular temporalities are meaningful, and this needs to be undertaken by considering a range of cultural determinants – social position and gender most obviously, but also important differences which emerge according to location."[11] Just as readers are figured as actors in specific spatial-temporal and discursive zones, so too periodicals, as mobile objects in their own right, offer themselves as suitable reading for specific spaces and times.

Despite the abundance of spatial-temporal references in the periodical text, the overriding temporality was the present.[12] This is perhaps unsurprising: as each periodical was marked with a date, the current number demarcated a temporal space in which it remained relevant before being inevitably succeeded by the subsequent number and so archived as part of the title's past. This present, which was constructed by the periodical text with reference to the quotidian lives of readers, was offered as a shared experience in order to cohere them as audience. Of course, the way the present was signalled varied between titles and was experienced differently by readers; but as the present was primarily a gap between numbers, periodicity played a crucial determining role.[13] Weekly periodicals, because they appeared more often, could create a sense of the present in the interval between numbers which was interpenetrated with recent events. Monthlies, with more "time to pause, reflect and remember," constructed a more distanced conception of the present through retrospective

[11] Mark Turner, "Periodical Time in the Nineteenth Century," *Media History*, 8 (2002), p. 191.
[12] For the notion of abundance see Ronald Schleiffer, *Modernism and Time: the Logic of Abundance in Literature, Science, and Culture, 1880-1930* (Cambridge: Cambridge University Press 2000).
[13] Turner (2002), p. 193 and Laurel Brake, *Print in Transition, 1850–1910* (London: Palgrave 2001), pp. 11–26

surveys and reviews that posited a sense of communal past.[14] Although these are generalizations, and there were a number of weekly and monthly rhythms to which late nineteenth-century periodicals adhered themselves, the persistent focus and construction of the present remained an important generic feature of the periodical.[15]

The photograph, which seemed to posit an unmediated link from the page to the moment in which the image was captured, not only playeda crucial role in representing the present but its novelty in the late nineteenth century press marked it as a fetishized object and so lended further value to any publication that it appeared within. Although photographs themselves were common in the late nineteenth century they had only appeared sporadically in the press prior to the appearance of the *Strand* in 1891. As I have mentioned above, this publication demonstrated that it was technically possible to utilize photographic reproduction to pack far more images – including photographs – into a relatively cheap monthly. However, the demands of this process, coupled with the novelty of seeing such densely and diversely illustrated publications, meant that photographs remained more or less restricted to the monthlies throughout the 1890s. Although weeklies such as the *Graphic* and *Illustrated London News* used photographs, they were often restricted in number and differentiated from their usual visual repertoire. It was not until the relaunch of the *Daily Mirror* as the *Daily Illustrated Mirror* in 1904 that the possibility of basing a daily newspaper around photographs was demonstrated.[16] Photographs, for readers of the periodical press in the 1890s, were a rarity and, if you encountered a photograph, you were likely to be reading a monthly.

Images of science and technology participated in the market for such images: not only was there a large extant readership for science in the late nineteenth century; but scientific subjects

[14] Turner (2002), p. 193.
[15] Brake (2001), p. 11; Turner (2002), 186, 188–9.
[16] See for instance Jeff Wright, "The Myth of the *Mirror*", *British Journalism Review*, 14 (2003), 59–66.

also provided a striking range of interesting, dramatic, and often uncanny images for the general reader. The editor of *Knowledge*, Arthur Cowper Ranyard, exploited high quality collotype reproductions in order to bring images of rare or exclusive phenomena to a wide readership. *Knowledge*, like the *Strand*, was a 6d monthly and the advertisements on the blue wrapper suggest a leisured, book-buying readership who also were consumers of scientific instruments. Ranyard succeeded the founder of *Knowledge*, the prolific popular science writer Richard Anthony Proctor, after his death in 1888, and had inherited his sizable readership for astronomy. Ranyard, a barrister by profession, was also an astronomer and had achieved substantial respect for his editorship of the 1879 eclipse edition of the *Memoirs of the Royal Astronomical Society*. This included illustrated accounts of all solar eclipses from 1715 to 1871 and, as all the original images were in a range of formats, entailed a complex negotiation between reproductive techniques to produce what Alex Soojung-Kim Pang describes as "one of the few volumes that could serve as a tool for scientific research."[17] Ranyard, on assuming the editorship of *Knowledge*, immediately began experimenting with photographic reproduction and, by March 1889 was including two high-quality collotypes, usually of astronomical subjects, in each number.[18] These were full-page, printed on unpaginated fine paper, and included within the monthly price of the magazine. Ranyard often appropriated the images as the subjects of his astronomical articles, reversing the usual hierarchies between text and image. Rather than illustrate the letterpress, these photographs displaced the phenomena under discussion, instead offering themselves as spectacle.

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[17] Alex Soojung-Kim Pang, "Victorian Observing Practices, Printing Technology, and Representations of the Solar Corona (I): the 1860s and 1870s," *Journal of the History of Astronomy*, 25 (1994), p.267.

[18] Collotypes use glass plates coated with a films of bichromated albumen and chromated gelatin. The plate is exposed to the negative, the gel hardens in proportion to exposure and, after moistening, takes ink accordingly. See A.C. Ranyard, "The Collotype Process and Photo-Engraving," *Knowledge* (1890), 12, 71-72. Pang (1994), p.256.

When such textual strategies are applied to observational sciences such as astronomy there is a shift between structures of authority. Whereas arguments about distant phenomena relied upon the way the traces of that phenomena were recorded and communicated, the reproducibility of the photograph, as well as its seemingly mechanistic mode of production, displaced the site of such arguments from the observatory to the page. When Ranyard reproduced E.E. Barnard's acclaimed photograph of the Milky Way, taken at the Lick Observatory in July 1890, (figure 1.) he made such a displacement explicit:

> They are well worthy of close examination, for they afford the reading public an opportunity of studying the structure of certain rich portions of the Milky Way, such as only the possessors of the largest telescopes have hitherto enjoyed. Indeed, I am probably right in saying that that these plates show more of the structure of the milky way than can be seen by the eye with any telescope, for the gradations of brightness are accentuated, if smaller stars are not shown, and the eye can never grasp at one time, in the eye-piece of a telescope, as wide an area as that presented in these photographs.[19]

The photograph, as printed in *Knowledge*, surpassed the telescope as an instrument of scientific knowledge. The camera was considered a "chemical retina" which gathered light (via the telescope) from the cosmos and stored it upon the negative. The distances involved entailed long exposure times (Barnard's images were exposed for four hours) and accurate driving clocks in order to capture the subtle traces of light as the earth rotated. The Lick Observatory had, at the time, the largest refracting telescope in the world. Barnard's photographs were not taken with this telescope, however, but with a much smaller six inch portrait glass. By confusing the distinction between Barnard's negatives and his reproductions, while insisting that Barnard's images surpass even those created with the mighty Lick refractor, Ranyard offered his readers the opportunity to experience vast, distant galactic structures, as existed a long time in the past, at once and in the present.[20]

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[19] A.C. Ranyard, "On the Distribution of the Stars in the Milky Way," *Knowledge*, 13, July 1890 (1890), pp.174-175.

[20] This was controversial. See Mussell (2007), pp. 42–55 and William Sheehan, *The Immortal Fire Within: The Life and Work of Edward Emerson Barnard* (Cambridge: Cambridge University Press 1995).

Such temporal and spatial dislocations also operated through the microscopic but, in this disciplinary context, the photographic reproductions were presented slightly differently. Figure 2. is a collotype reproduction from a magic lantern slide published to illustrate E.A. Butler's serial, "The Common Flea" in *Knowledge* for January 1890.[21] The image confronts the reader with an object that is both familiar and slightly strange: microscopic images, like all photographs, rarely appeared in the periodical press before the late nineteenth century; however, they were commonly exhibited – as indeed this one originally was – as lantern slides to accompany lectures or reproduced as woodcuts or lithographs in periodicals and monographs. Like the reproductions of astronomical photographs, the camera's "unadorned realism" operated to disconcert by temporal and spatial translation: the image is too transparent, too flat, and yet its overwhelming reality both revolts and compels us.[22] Isobel Armstrong has discussed the voyeuristic pleasures that such technologies afforded the viewer: the mediating instrument is elided as the viewer is propelled into strange proximity to these uncannily still objects.[23] Naturalists fully recognized the pleasures of microscopy and its potential to open new temporal and spatial realms. Edward H. Robertson, writing in a rival publication to *Knowledge*, *Science-Gossip*, claimed the microscopist may:

> wander through Nature's unbounded realm, gleaning in every sweet field, and even from the most neglected corners and arid deserts, marvels of beauty to call forth his admiration and delight. Imprison him in a lonely cell and leave him but his microscope, and I trow [sic] he will have no cause to lament a lack of beauty within even its narrow confines. Nay, more, remove from its case the work of that triumph of human skill and contrivance, a watch, and tell him to accomplish the seemingly impossible of task of filling its empty compass with a store of marvels that would require a life-time to examine, and it shall be done.[24]

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[21] E.A. Butler, "The Common Flea. II," *Knowledge*, 13, January 1890 (1890), p.41–3.
[22] John Plunkett, "Celebrity and Community: The Poetics of the Carte-de-visite" *Journal of Victorian Culture*, 8 (2003), p.68.
[23] Isobel Armstrong, "The microscope: mediations of the sub-visible world," in *Transactions and Encounters: Science and Culture in the Nineteenth Century*, ed. by Roger Luckhurst and Josephine McDonagh (Manchester: Manchester University Press 2002), pp.30-54.
[24] Edward H. Robertson, "Gossip About Foraminifera," *Science-Gossip*, 25, January 1889 (1889), p.13.

The capacity for the naturalist to lose himself – and the naturalist was always imagined as male, despite the presence of women authors elsewhere in the magazine – was fully dependent on the microscope.[25]

This position is carefully regulated in Butler's article. The very use of photographic reproduction and enlargement not only displaces the mediating instrument, but also - just as in the astronomical photographs – displaces the use of the instrument itself. This located the viewer in fixed scopic site, preventing him or her from zooming in or out. Whereas Ranyard insisted his reproductions of Barnard's images 'will bear examining with a hand magnifier', empowering the reader to manipulate the image, Butler's letterpress presented the image as merely an illustration of what he has to say.[26] H.G. Wells, writing in *Nature* in 1894, claimed that a scientific paper for popular reading, "may and should have an orderly progression and development" and that "that scientific exponents who wish to be taken seriously should not only be precise and explicit, but also absolutely serious in style."[27] This emphasis on order and seriousness acted in two ways. Firstly it granted the author a degree of gravitas, allowing him or her to claim simultaneously both objectivity and authority through a sleight of hand that masked their teleological control of the material. Secondly it regulated the pleasure that both authors and readers could take in the observation of scientific objects. Robertson's anecdotal and anachronistic style clearly contravened Wells's advice; as a microscopist writing for an existing community of naturalists he did not need to adopt the serious tone necessary for educating the general reader and so instead used an archaic diction more akin to literary writing in order to mark his discourse. Butler's account, as part of a much longer

[25] Mary B. Morris, "Jottings Concerning Certain Fruit Trees. Part VI – The Chestnut Tree," *Science-Gossip*, 26, April 1890 (1890), p.80.
[26] Ranyard (1890), p. 174. He repeats this claim when he returns to the subject the following year. See A.C. Ranyard, 'The Milky Way in the Southern Hemisphere', *Knowledge*, 14 (1891), 50.
[27] H.G. Wells, "Popularising Science," *Nature*, 50, 26 July 1894 (1894), p.301. For a similar argument using the same language see Karl Pearson, *The Grammar of Science* (London: Walter Scott 1892), pp.9-15.

narrative, did not quite fulfil Wells's strictures either, but did guide the reader around the flea in ways that mirrored the politics and erotics of the reproduced photograph.[28] Details such as "[t]he dark stains on linen, that indicate where fleas have been, consist of their dried excrement" referred to things not in the photograph but still revelled in the grotesque of the new material world into which the reader was thrust.[29] In both his letterpress and the accompanying illustrations Butler accounted for the differences between this new way of encountering the flea and the reader's own everyday experience. Just as he explained the digestive system of the flea, so too does he explain why his images look like they do (the sample has been flattened, and parts of its internal anatomy have been dissolved out to render it transparent). In accounting for these differences, Butler guides the reader through this now unfamiliar world, providing access to the elicit pleasures that it provides on the condition that it is regulated through his narration.

As well as providing a source of regulated voyeuristic pleasure, images of scientific or technological objects could demonstrate the ingenuity of the scientist while also providing evidence of industrial endeavour and national achievement. Equally, portraits of scientists circulated alongside authors, actors, musicians, representatives of the clergy and nobility, and politicians as part of late nineteenth-century celebrity culture and so further established science as a respectable liberal enterprise. The *Strand Magazine* incorporated scientific images in order to do all of these things, but it did so to emphasize the importance of the contemporary. Kate Jackson, following Reginald Pound, suggests that because all copy for the magazine had to be ready four weeks in advance, it presented a peculiar, ahistorical

[28] Butler later published the serial as a whole, accompanied by his others from *Knowledge*, as *Our Household Insects* (London: Longmans, Green and Co. 1893).
[29] Butler (1890), p. 41.

contemporaneity.[30] This is not to suggest that the *Strand* did not respond to the world around it, but rather that its representation of the past and the passing moment were rendered part of a stable, constant and coherent present that buttressed that of its readers. Its long-running serials "Portraits of Celebrities from Different Times of Their Lives" and "Illustrated Interviews" both deployed reproductive technologies to render images in ways that supported this temporality. "Portraits of Celebrities" featured a series of portraits accompanied by a brief biography. The source portraits were labelled as to their original form, usually an oil painting or photograph, but were engraved to be included in the *Strand*. The serial thus arranged time spatially: as the portraits were all engraved prior to their publication, they were differentiated from their source images – whatever they were – and made to appear similar. This then effaced any visual differences between media (while still gesturing towards them through the captions) and established a progression based upon the changing features of the sitter. As the celebrities were usually chosen according to their contemporary fame, the final portrait provided the totalized image of their past in this context. Scientists were part of this, but often for their position in public life rather than for their science. The portraits of Lord Kelvin (figure 3.) are accompanied by a biography that counters his scientific activity with both his public achievements (he recently became Lord Kelvin) and his private hobbies.[31] This careful balance was characteristic of late nineteenth-century celebrity culture: it was public achievements that granted them an appearance in the series; while it was the private details – whether previously unseen portraits from their youth or details of their hobbies – that promised intimacy with otherwise inaccessible public figures.

This mediation between the public and the private was also enacted in the "Illustrated Interviews." Each consisted of a chatty extended interview conducted by Harry How with the

[30] Kate Jackson, *George Newnes and the New Journalism in Britain 1880-1910* (London: Ashgate 2001), p.116 and Reginald Pound, *The Strand Magazine 1891-1950* (London: Heinemann 1966), p.64.
[31] Anonymous, "Portraits of Celebrities," *Strand*, 5, June 1893 (1893), p.590.

celebrity in their home accompanied by choice photographs of their rooms. Jackson sees the "Illustrated Interview" as "a rejoinder to concerns about the disjunction between the private lives of the middle and upper classes and the values which they advocated in public" as the private text, as read in the domestic surroundings of the interviewee, was rendered to the reader as ratification of that person's prominence.[32] They therefore operated in a similar way to the "Portraits of Celebrities", but instead offered private spaces in the present, as proof of public worth rather than private details from the past. The photographs, which particularly emphasized the works of art, bric-à-brac, and curiosities that filled the rooms of the interviewee, made the reader complicit in the intrusion along with the interviewer as he or she was invited to judge and admire the possessions of the celebrity. Often the interviewee's artworks were photographically reproduced, increasing the cultural value of the text of the *Strand Magazine* by making the unique work of art available to its readers, while simultaneously reaffirming its spatial and temporal location in the contemporaneous possession of the interviewee.

However, when the well-known optical-glass maker Sir Howard Grubb was interviewed in 1896, a much wider range of images were published.[33] Grubb's firm was well established as one of the best in the world, and was currently enjoying a great deal of acclaim after installing a 26" photographic telescope at the Royal Observatory, Greenwich. The interview itself begins with Grubb's humble origins, before relating his life up to this recent success. However, the interview is contextualized within a larger narrative of telescope manufacture, and it is this, along with images of Grubb's staff at work, that constitutes the illustrative material. After an image of Grubb's son inserting the wires onto the micrometer, Sir Howard is barely mentioned for the last four pages, as the narrative recounts anecdotes about famous

[32] Jackson (2001), p.113.
[33] William G. FitzGerald, "Illustrated Interviews. No 1. Sir Howard Grubb, FRS, FRAS, Etc, Etc," *Strand Magazine*, 12, October 1896 (1896), pp.369-381

telescopes. After a discussion of the Lick refractor, accompanied by a photograph, the article turns to the Yerkes refractor, which had recently surpassed the Lick for size on its completion in 1896. Grubb had failed to get the contract for the Lick 36" refractor, although some of his ideas were employed for the elevating floor, and had even less to do with the Yerkes 40" refractor. Grubb, in fact, has become entirely displaced by this history of telescope size, and the resulting images seem to present a progressive series, much like "Portraits of Celebrities," with photographs of telescopes replacing engravings of notable public figures. The use of photographs for the images of telescopes was acceptable as they could all still co-exist in the present without disrupting the narrative of progress.[34] The final image, however, is a sketch of Grubb's proposed telescope of the future (figure 4). Positioned immediately below the photograph of the Yerkes refractor (then, and now, the largest refracting telescope in the world), the different media of the sketch enforces a distinction between present and future that holds out the possibility of Grubb's re-entrance into this narrative while simultaneously asserting the superiority of the present.

It is suggestive that the treatment of both Kelvin and Grubb dwelt upon technological objects (and in Kelvin's case public achievements and private hobbies) rather than science itself. The *Strand Magazine*, as ostensibly diverting rather than instructive reading, used science to amuse rather than to educate. For instance another Fitzgerald piece in volume 12 of the *Strand*, "Some Wonders of the Microscope," used reproduced microscopic photographs solely in order to entertain the reader. Unlike Butler's account in *Knowledge*, Fitzgerald gleefully emphasized the contiguity between the microscopic world and the world of the readers. Commenting on an image of a fly's foot, Fitzgerald asks the reader to "fancy this awful

[34] There is also a photographic reproduction of an "old print" of the Blanchini telescope and a photo-engraving of a sketch of workers in Grubb's workshop – the latter presumably because of the difficulties in photographing near the furnaces.

looking thing being laid lightly on your face at all hours of the day."[35] It was not just Fitzgerald who exploited photographs in this way. In the same volume Alfred Porter, a physicist at University College London, provided a similar description to accompany photographic reproductions of X-rays.[36] Referred to as the "new photography," these images, like the microscopic photographs, presented familiar objects in strange ways. Even when Porter writes that the medical aspect of the images "is more suited to the pages of a medical journal – we prefer not to look on ghastly things" he proceeds to reproduce and discuss them.[37]

Science in the *Strand Magazine* thus occupied an uneasy space between the delightfully strange and strident progress.[38] These contradictory aspects were brought together in the *Strand's* regular "Curiosities" department. Figure 5. juxtaposes a potato shaped like a cockatoo's head ("a curious freak of Nature"), the grave of a Congo chief, some poisonous darts, and a scrap of David Livingstone's library. The photographs signal the co-existence of these bizarre objects; but they are not markedly different from the celebration of telescope size, or the weird realms that are presented to the viewer through the distorting combination of camera and laboratory. The written descriptions that accompany each photograph relate them to the world of the reader: the photograph of the potato is from Banbury and was taken by a *Strand* photographer; the grave of the Congo chief is offered as evidence of the savagery of his race (although it does so on the basis that the tribes engage in commerce and drink, practices hardly restricted to Africa); the darts are related to Conan Doyle's *The Sign of Four*, which, although not published in the *Strand*, would remind readers of the *Adventures of Sherlock Holmes* that were; and Livingstone's diary entry is presented as a vindication of his

[35] William G. Fitzgerald, 'Some Wonders of the Microscope', *Strand*, 12, August 1896 (1896), 210.
[36] Alfred W. Porter, B.Sc., "The New Photography," *Strand*, 12, July 1896 (1896), p.107-117.
[37] Porter (1896), p.112.
[38] For more detail about this uneasy space see Mussell (2007), pp. 61–84.

motives that also seems to be a justification of the Imperial mission. Although the objects themselves existed in a range of times and spaces, the photographs suggest their simultaneous presence in time (the objects exist in the present) while allowing their co-presence within the text of the *Strand*. It was the photograph that brought the strange into the pages of the *Strand* by insisting that the objects and scenes represented also existed beyond its pages; the discourse of the text as a whole organized them so that they offered a stabilized contrast against which to posit the familiar.

The title of the department, 'Curiosities', summarized the *Strand's* attitude to both science and the role of photography in the production of images. These things were curious because they were real, and the photographs provided evidence of their presence in the world. The visual tourism of such articles was an extension of the much older tradition of travel writing. However, just as improved transport and communication networks precipitated actual domestic and international travel, so the publishing of photographs in the periodical press brought these different spaces closer to the reader in the present. The various technologies of photographic reproduction presented a wider visual repertoire into the periodical press. The novelty of reproduced photographs, after a lengthy period in which they were inscribed with a powerful rhetoric of transparency, reconfigured the temporalities of the older imaging techniques. Whereas a common medium might provide images for fiction and nonfiction, history and portraiture, the existence of images that elided the human hands that manipulated them (while exposing the artifice of engraving or lithography) provided a pathway that led the viewer to the moment of imaging. As Julie Codell suggests, viewers were well-skilled in "reading" an engraving to locate the original in time and space; however, photographic reproduction offered to mobilize that original, and present it upon the page while

simultaneously reaffirming its location.[39] The common practice of labelling a reproduced image as to its source clearly demonstrated the need to identify some sort of "original" and affirm the social differences between genres. Although there was still discussion over the photograph's claim to realism in the nineteenth century,[40] its clear acceptance as both an automatic imaging and automatic reproductive technology threatened distinctions established through temporal and spatial boundaries, and gestured instead to the multiple co-existences of objects and their contexts, providing them for readers to be consumed as part of an evocation of the present crucial for the commodification of single issues of periodical texts.

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[39] Julie F. Codell, "The Aura of Mechanical Reproduction: Victorian Art and the Press," *Victorian Periodicals Review*, 24 (1991), p.6.

[40] Especially in portraiture, as much of the late nineteenth century photographic press will reveal. See for instance John Werge, "Three Aspects of Photography. Part 3. The Future," *The Practical Photographer*, 4, December 1893 (1893), p.312.