

AUDREY
HEPBURN FRED
ASTAIRE

IN
**FUNNY
FACE**

co-starring
KAY THOMPSON

with **MICHEL AUCLAIR · ROBERT FLEMYNG**
MUSIC AND LYRICS BY GEORGE AND IRA GERSHWIN
CINEMATOGRAPHY BY URSINE LEBRON AND FRED ASTAIRE • SONGS STAGED BY STANLEY DONEN
PRODUCED BY ROGER EDENS • DIRECTED BY STANLEY DONEN
WRITTEN BY LEONARD GERSHIE
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57-63

“Diseases in the Darkroom”: Morality and Mortality in Nineteenth- century Photographic Chemical Work

Jennifer Tucker

fig. 1

Ray June (?), Audrey Hepburn and Fred Astaire in a scene card of the film *Funny Face*, Paramount Pictures 1957, detail from exhibition label at the National Museum of American History, 2023. Image courtesy of the National Museum of American History, Smithsonian Institution, Washington DC.

The essays in this issue cast new light on the darkroom, a space that has long been of significant importance in the material and symbolic production of photography. The darkroom can be described as an ‘intermedial space’ between the taking of a photograph and its dissemination. It is a place where truths are uncovered: facts about the world are revealed, along with truths about the character of the person making the photograph. A space of mystery, expertise, and hidden operations, the darkroom is a popular subject in horror and psychologically suspenseful films, from *Sacrifice!* (1972) to *The Faculty* (1998) to *American Guinea Pig* (2014). It is also a setting of desire and objectification, as in the case of *Funny Face* (1957), which featured a famous tap-dance-in-the-darkroom scene in which actor Fred Astaire (a character loosely based on photographer Richard Avedon) pulls a photograph of his young muse (played by movie star, Audrey Hepburn), out of the developing bath (___ fig. 1).¹

The multiple valences of the darkroom also reverberate in contemporary literature. For the writer *Günter Grass* (1927–2015), the darkroom figured as an experimental device to capture the memories of his children growing up with a father who existed on the margins of their life.² The darkroom is revealed across many writings as a space of discovery, opportunity, and pleasant surprises, but also of transgressions, grief, accident, and physical and emotional harm. For example, the American writer Susan Faludi (b. 1959), in her 2016 memoir *In the Darkroom*, used the darkroom as a device for re-examining the notion of identity.³ The darkroom has occupied a position historically at the threshold or boundary of trust and suspicion: a powerful place where images are first intensified and revealed by skilled chemists, and also where dishonest and unethical practices hide in darkness. This “moral indeterminacy of the darkroom” is referenced in popular culture as well, as evident in its wide range of historical definitions. For example, in Elizabethan times, the darkroom was a place of confinement for people considered insane or possessed; in other contexts, its dark identity had associations with backrooms, typically at night clubs or sex clubs.⁴

Conceptions of the darkroom in contemporary popular and commercial culture are in part a legacy of nineteenth-century ideas around the darkroom as a morally ambiguous, temporalized space. Anticipating future trends, the nineteenth-century darkroom with its exciting and intensifying processes was widely referenced in

1 ___ Fred Astaire’s character is based on American fashion and portrait photographer Richard Avedon (1923–2004), and Avedon himself set up most of the photography for the film.

2 ___ Günter Grass, *Tales from the Darkroom*, Boston 2010.

3 ___ Susan Faludi, *In the Darkroom*, New York 2016.

4 ___ The nineteenth-century darkroom and its fittings were the subject of numerous nineteenth-century photography advice manuals, many of them illustrated. See, for example, William De W. Abney, *Photography with Emulsions*, London 1885, 30–48.



fig.2
 'Photographic Processes', wood engraving in Cuthbert Bede (Edward Bradley), *Photographic Pleasures, Popularly Portrayed with Pen and Pencil*, London 1855, opp. 28.

fig.3
 'What it May Come To: Or - The British Nursery in 1865', wood engraving in Cuthbert Bede (Edward Bradley), *Photographic Pleasures, Popularly Portrayed with Pen and Pencil*, London 1855, 57.

popular culture from its earliest days (—fig.2). For example, two 1855 visions in woodcuts of amateur photographic chemistry – present and future – portray scenes of domestic gender and moral disorder unleashed by photographic processes in the domestic setting. One depicts a father horrified to discover that, during his brief absence from the darkroom, his children have emptied out his bottles; in another scene, the chemical bath manipulations have moved to the nursery, with children iodizing the plates (—fig.3).

The second half of the nineteenth century saw vastly expanded amateur and professional photographers' experimentation with manufactured chemicals, coinciding with historical transforming forces in society. This included heightened scrutiny and anxieties around urban life, entertainment, commodification, and fraud; and health dangers from newly industrialized products and their environments. Darkrooms were the scenes of grim injuries and murders, suicides and accidents of family members and assistants. This gave rise to significant public interest in, and scrutiny of, the activities of photographers. Concerns were raised about sexual dangers in photographic studios, with newspapers sometimes containing cautions to women against going alone to studios and reporting incidents of assaults on sitters or photogra-

simple. Two or three tables are sufficient, and the light should either be entirely excluded by pasting black paper over the windows, and the operations conducted by the light of a candle or a gas jet, surrounded by a square lantern of yellow glass, or else, as often preferred, the dark room is so arranged that the light comes exclusively through a frame of yellow glass about 10 inches by 8 inches, and this covered with a sheet of very thin white paper, in order to impede the passage of the direct solar rays. A hinged frame is fitted in front of this square of yellow glass in such a way as to admit of its being totally or partially covered, in order to diminish or increase the amount of illumination at pleasure.



Fig. 28. Dark Chamber.

It is necessary to select glass of a deep yellow colour, and avoid the paler kinds.

The drawing (Fig. 28) represents the dark chamber which has been used for many years by M. Monckhoven.

The entrance is at the bottom of the room, and the door, for greater security, covered with a black drapery. A cistern of water, furnished with a tap, supplies the necessary means for washing, and underneath this is

fig. 4

'Dark Chamber', woodcut in Désiré van Monckhoven, *A Popular Treatise on Photography*, London 1863, 29.

phers.⁵ Some articles decried examples of the “immoral behavior” of photographers (assault, robbery, copyright infringement), with some of these activities taking place in the darkroom.⁶

During this period, lessons from the darkroom were thus not just about taking good *pictures*, they were also entwined with life lessons and moral claims about, for example, individual behavior, trust, social access, discipline, and authority. The darkroom has long been understood as a place for re-examining notions of identity, evidence, concealment, time, deception, and truth. Darkrooms and their associated chemical baths were places of disciplined work, measurement, precision, and experimentation, but also a potent nexus for social anxieties, fears, exclusion, and harm.⁷ They were also sites of mystique and excitement, settings of behind-the-scenes operations, manipulations, and effects (— fig. 4) that influenced the work and perceptions of photography. Some of these ideas reverberate in more recent times. For example, historian Patricia Hayes, in her examination of the work of South African photographer, Santu Mofokeng (1956–2020), writes about how photographers, sometimes because of their socio-economic status, used “exhausted chemicals” to achieve certain effects. Quoting Mofokeng, who said, “You can try your luck in the darkroom,” Hayes notes the “spinning out of temporality in the darkroom and its effect on the image and on history.”⁸

This essay uses photography trade journals to consider early photographers’ experiences of the darkroom, with a focus on how the technical skills that darkroom work demanded of the photographers’ bodies impacted

their sense of selves and also medical and societal understanding.⁹ The chemical labor of darkroom practices contributed, I suggest, to the emergence of new theories about photography: for example, how it not only transformed images, but also the bodies and minds of operators.¹⁰ Consider, for example, the wood engraving in Gaston Tissandier’s 1874 *Les Merveilles de La Photographie* depicting the scene in a “cabinet noir” wherein a photographer with rolled-up sleeves examines a plate over a chemical bath in a room with ordered materials and even sunlight (— fig. 5). This scene is in sharp contrast to an adaptation by British photographer and historian Bill Jay (1940–2009), titled “Reasons for agitation in the darkroom,” where the same

5 — *Photographic News*, 25 September 1863, 458.

6 — *Photographic News*, 16 August 1861, 383–384; and 10 April 1863, 174.

7 — Spirit photography is discussed in Jennifer Tucker, *Nature Exposed: Photography as Eyewitness in Victorian Science*, Baltimore 2006. On the cultures of visual evidence, photography and chemical labor in industrializing Britain see also Jennifer Tucker, ‘Over London at Night: Gasworks, Ballooning, and the Victorian Gas Field’, in: *British Art Studies*, vol. 22, 2022; and Jennifer Tucker, ‘Dangerous Exposures: Work and Waste in the Victorian Chemical Trade’, in: *International Labor and Working-Class History*, vol. 95, 2019, 130–165.

8 — Patricia Hayes, ‘Santu Mofokeng, Photographs: “The Violence is in the

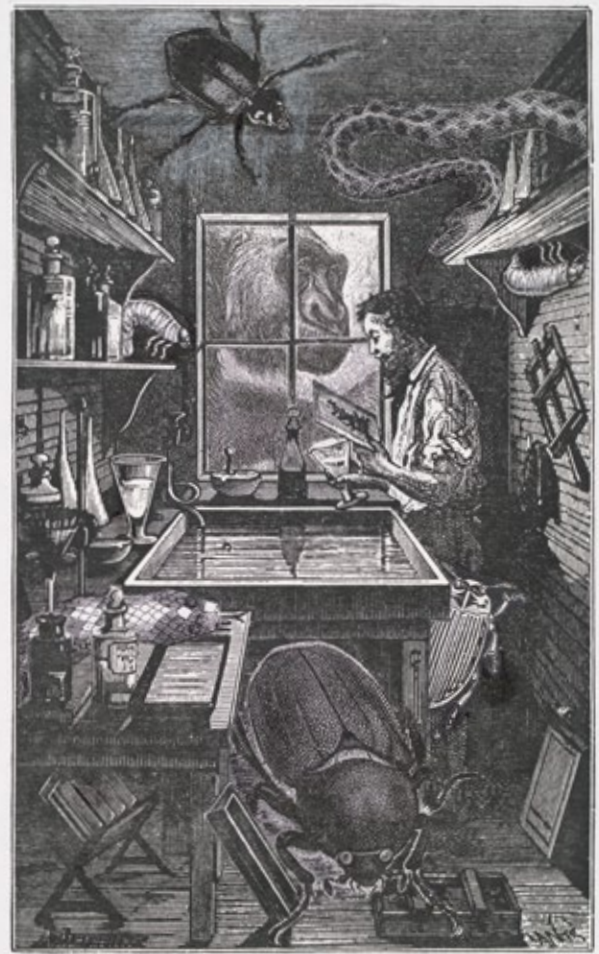
Knowing”’, in: *History and Theory*, vol. 48, no. 4, December 2009, Theme Issue 48: Photography and Historical Interpretation, ed. Jennifer Tucker, 34–51, 35–36.

9 — Sara Dominici, ‘Darkroom Networks: Mundane subversiveness for photographic autonomy, 1880s–1900s’, in: *photographies*, vol. 14, no. 2, 2021, 265–286, 281.

10 — In their handbook, *Overexposure*, published in 1983, photographers Susan D. Shaw and Monona Rossol brought public attention to the health and safety hazards faced by twentieth century contemporary amateur and professional photographers, especially those working in black and white, color, photo printmaking, and restoration materials.



Fig. 10 — Cabinet noir.



Reasons for agitation in the darkroom.

fig. 5
 'Cabinet Noir', wood engraving in
 Gaston Tissandier, *Les Merveilles de
 La Photographie*, Paris 1874, 10.

fig. 6
 Bill Jay, *Reasons for agitation in the
 darkroom*, before 1992, collage
 on medium, smooth, white wove
 paper, sheet: 27.9 × 21.6 cm, image:
 19.7 × 12.4 cm, signed in black
 ink, lower right, "BJ". Yale Center for
 British Art. Image courtesy of Juliet
 Jay, The Bill Jay Estate.

image has become a disturbing scene of invasion, risk, and predation from creatures (insects, reptiles, and primates) of an exaggerated scale, even as the photographer remains unaware (— fig. 6).¹¹ Jay, whose own research and writings advanced historical understanding of diseases of the darkroom, combined words and images in revealing hitherto relatively more hidden and neglected dimensions of the embodiment of photographic operations.¹² In this essay I aim to further advance this historical understanding by elaborating on the darkroom's association with narratives of moral and chemical danger. Closer attention to the intermedial space of the darkroom, I suggest, provides a lens on an often-hidden world of power and danger, where photographers not only exposed plates, but also were themselves exposed.

Compounding dangers

As far back as the 1700s, it was known that small traces of mercury (for instance, from a broken thermometer) were enough to kill all the plants in a greenhouse. With photography, the problem was made worse when daguerreotypists breathed the fumes of mercury placed over a spirit lamp. All that could be recommended was that the

11 — See esp. Bill Jay, 'Death in the Darkroom: Poisonings of Nineteenth-Century Photographers', in: *Phoebus 3: A Journal of Art History*, 1981, 85–98; and Bill Jay, *Cyanide & Spirits: An Inside-out View of early Photography*, Munich 1991.

12 — Dominici 2021 (reference 9) and Tanya Sheehan, *Doctored: The Medicine of Photography in Nineteenth-Century*, University Park, Pennsylvania 2011. See also Steven Shapin and Christopher Lawrence (eds.), *Science Incarnate: Historical Embodiments of Natural Knowledge*, Chicago 1998.

darkroom be well ventilated. Even then, some photographers succumbed. Jeremiah Gurney, one of America's foremost daguerreotypists, was close to death in 1852 due to the effects of mercury. "He has suffered the most acute pain, and been unable to move his limbs; his legs and arms have been swollen to nearly double the ordinary size."¹³ The fumes of iodine and bromine were also dangerous.

By the mid-1850s, the daguerreotype was largely displaced by the collodion process. The invention in 1851 of a method of making negatives on glass, rather than on paper, made the collodion, or wet-plate, process popular from the 1850s through the 1880s and even later (e.g., 1890s, still being used in lantern slide production). But even here mercury poisoning was common.

In the 1860s and 1870s, dangers were compounded by the rapid proliferation of different kinds of photographic studios. Darkrooms ranged from the luxurious to seedy spaces, and the contexts and conditions of chemical manipulations in the darkroom varied. As their forms and varieties proliferated in the later nineteenth century, wealthy amateurs and commercial photographers navigated different realities of social reputation and trust in their darkroom operations. Additionally, because photographers prepared their own chemicals using a variety of techniques, there was considerable uncertainty about the chemical environment at any given time or space. According to one photographer, "all photographers are not chemists, although they should be."¹⁴ The pages of nineteenth-century photographic periodicals were filled with tales of the dangers and hardships endured by these photographers. The darkroom could be deadly, and the mortal dangers of processing and printing were even more dreaded for being unseen and unnoticed until it was too late.

By 1860, there had been considerable experience with chemicals among both amateur and professional photographers, so much so that the subject was taken up in the new photographic periodicals and trade magazines, which regularly listed photographic poisons and their suggested antidotes. In that year, for example, the *British Journal of Photography* published an article titled 'A Table of Antidotes to the Poisoning Bodies used in Photography (Drawn up from the Most Recent Medical Authorities).' The author, Samuel Highley, F.G.S., F.C.S., was the Late Lecturer on Medical Mineralogy at the Saint George's School of Medicine, Grosvenor Place, London.¹⁵ A prolific author, he was also a skilled photographer and lanternist, and a member of the Geological Society and the Chemical Society. In the aftermath of a widely publicized legal case related to the dangerous explosive and inflammatory properties of two photographic materials – sulphuric ether and its vapor, and collodion – the article became one of the most widely read articles on the subject in an age before the establishment of occupational safety as a public health practice. In his 'Table of Antidotes,' Highley listed 21 poisons with their symptoms and recommended treatment in the case of chemical poisoning. He emphasized that "prevention is better than cure," particularly when no cure was known – and he made many recommendations that treated symptoms more than causes (e.g., an emetic of mustard in warm water). In many cases, however, there was simply no antidote available.¹⁶ Other commentators too wrote about specific antidotes to noxious chemicals. For example, one doctor, acknowledging that the "ethereal atmosphere of the dark-room, for instance, is

13 — *Humphrey's Journal*, 1852, 28.

14 — *Photographic Times*, 1871, 93.

15 — Jay 1991 (reference 11). Samuel Highley, *British Journal of Photography*, 1 June 1860, 160–161. Microscope manufacturer Samuel Highley was credited

by Lionel Smith Beale as being one of "the first makers in London who brought out a really good, cheap, practical instrument."

16 — 'Dangerous Chemicals', in: *Photographic News*, 19 October 1860, 289–290.

very debilitating, especially in hot weather,” recommended that photographers drink lemonade or seltzer water “which tend to annihilate the effect of the ether fume.”¹⁷

Editorial writers, photographers, and occasionally medical doctors or public health officials urged their readers to observe proper precautions and to be aware of the potential dangers of inhaling fumes, ingesting materials, or simply handling their chemicals. Typical of these editorials was one published in *Photographic News* in 1860:

*Perhaps there are few professions connected with the arts of peace, which involve the daily use of so many dangerous and destructive agents as photography. Corrosive acids, caustic alkalies, and deadly salts are its constant familiars. Whilst the dangers consequent upon the indiscriminate sale of poisons have been for some years past constantly impressed upon the public mind, and ingenuity has been taxed to the utmost to enact precautions, and provide bottles of different colours and shapes in which poisons should be vended, the photographer has been able to purchase, unchallenged, cyanide of potassium, bichloride of mercury, and other equally fatal agents sufficient to poison a colony.*¹⁸

Citing the potential dangers, several photographers wrote letters to photographic magazines seeking advice. In 1865, for example, *Photographic News* published an article detailing the toxic effects of ether on the photographer’s nervous system and brain when coating paper and glass plates with collodion.¹⁹ The dangers listed were gruesome – and were especially risky for assistants who worked long hours coating plates – while the prescribed remedies were weak. If a worker became unconscious, magazines recommended “sprinkling” them with water. Significantly, evidence from the 1860s indicates that there was already some discussion among photographic operators about the influence of “habit,” or acclimatization, in modifying the action of the alcoholic vapor. As was pointed out by some professional photographers at the time, there was a different level of exposure for a photographer who coated 12 to 20 cards for one hour in the morning compared to the operator who coated plates all day in a darkroom.²⁰ Meanwhile, the uncertainty and fear of chemical exposure led some individual photographers to search for less toxic substances, including emulsions made of such substances as urine, blueberry, and slime from snails.²¹

‘Photography and Disease’, which appeared in *Photographic News* in 1868, generated extensive correspondence from readers. Two readers sought advice from medical doctors regarding the “cause and remedy” of “sufferings that they attributed to photography.” One correspondent (“a sufferer”) listed the following symptoms: “Attacks of biliousness; spasms in the stomach; very acid stomach, and general indigestion.” He complained that his life had been miserable for the past nine years, “ever since I began photography.”²² But in many cases, readers and sometimes doctors discounted the link to photography. In response to the previous letter, for instance, the editor replied that the symptoms could arise from several other causes. A letter the following week from a well-known photographer summed up the problems of health hazards in the darkroom this way:

17 ____ ‘The Health of Photographers’, *Photographic Times*, August 1874, 124–125.

18 ____ ‘Dangerous Chemicals,’ in: *Photographic News*, 19 October 1860, 289–90. Quoted in Jay (reference 11), 86.

19 ____ ‘The Toxic Effects of Ether and Alcohol’, in: *Photographic News*, 24 February 1865, 86–88.

20 ____ *Photographic News* 1865 (reference 18) 86–88.

21 ____ For examples of non-chemical approaches (e.g., vegetable and animal) to photographic development, see Jay 1991 (reference 11), 43.

22 ____ ‘Photography and Disease’, in: *Photographic News*, 28 February 1868, 98–99.

*My own opinion is, that the ill effects cannot be attributed to any one chemical agency, but that they are the result of breathing for several hours every day an atmosphere contaminated with noxious fumes arising from the cola, developer, and, in some cases cyanide, to which may probably be added, absorption of poisonous substances through the skin, when the system had been already debilitated from over work, both of mind and body.*²³

The author, J. M. Burgess, was well known in the profession as the inventor, in 1865, of the eburneum process, a collodion emulsion that was applied to a waxed glass plate (the process reversed the image, but the original negative could be reversed for the exposure). Burgess stood convinced that photographers were particularly prone to stress arising out of their work – and that the strain often resulted in severe physical symptoms. And even the pleasure of photography could damage their nerves:

*Meanwhile, the excitement and pleasure afforded by the pursuit blind him to any symptoms of injury to the constitution until it is almost too late for recovery; too late, at least, for care and exercise alone to effect a cure. Indigestion, wind spasms, violent colic pains, extreme nervousness, and something like local paralysis are induced, until the sufferer is brought to such a state of weakness as to be unable to digest any solid food. So violent at times is the pain, that the sufferer is convulsed, and symptoms not unlike poisoning by strychnine produced. The face assumes a leaden hue, the limbs become rigid, with the hands tightly clenched, and the back arched, so that the body rests on the back of the head and heels. But is it possible that this can in any way result from the practice of photography?*²⁴

Citing his personal experience, Burgess reported that only extended rest in the countryside normally relieved him of symptoms. Nevertheless, he concluded that rather than the cause of the symptoms, the inhalation of noxious fumes was merely a great “aggravation.”²⁵ In the very same issue, in an article titled ‘Photography and Disease’, a correspondent named George Fitt also attributed the well-known sufferings of photographers to secondary causes, such as the lack of food and breaks, citing his own experience.²⁶ Yet he singled out a particular chemical used in photographic work that, in his view, was dangerous: chloride of gold, which was active, soluble, and easily absorbed by photographers who dipped their fingers into the toning bath.²⁷

Photographers identified other chemicals as villains, as well. In the same March 1868 issue, a photographer declared in an article titled, ‘Health *versus* Chemicals’, that next to cyanide, there were no worse chemicals in general use in photography than methylated ether and alcohol. As he put it, these were “quite sufficient to cause anyone who has many plates to sensitize to feel very unwell, unfit for work, and inclined to be careless about other manipulations.” Exposure to these chemicals was deemed especially injurious to eyesight, he explained, saying: “I usually coat my plates in a glass studio, and then take them into the dark room to place in the nitrate bath, covering the bath over with a brown paper cap, and not shutting the door of the room until the plate is ready to take out of the bath.”²⁸ But even in the

23 ____ ‘Correspondence: Photography and Disease’, in: *Photographic News*, 6 March 1868, 117–118.

24 ____ J. M. Burgess, *Photographic News*, 6 March 1868, 117.

25 ____ Burgess seems to have died less than five years later, aged thirty-one, cause of death unknown.

26 ____ ‘Photography and Disease’, in: *Photographic News*, 6 March 1868, 117–118.

27 ____ Jay 1991 (reference 11), 118.

28 ____ ‘Health versus Chemicals’, in: *Photographic News*, 6 March 1868, 119.

large, well-ventilated space within which he worked, he smelled “horribly of collodion,” as the “effluvia” permeated everything – even breath. Suspecting impurities, he eventually decided to manufacture his own collodion, and advised others to do the same. He provided a recipe that was less sensitive than the manufactured variety, but he claimed was less injurious to his health. It included pure ether and pure absolute alcohol.

Many of the prescribed solutions to photographic toxicity in nineteenth-century developing rooms were ordinary health practices at the time: better ventilation, the use of tongs in dangerous chemical baths, walks in the fresh air, regular meals, frequent washing of the hands, and bathing. On arriving home, the photographer should drink a glass of claret laced with quinine – a bitter compound present in cinchona bark used as an antimalaria drug – or drink sugar water with a few drops of ammonia or vinegar.²⁹ In fact, the same chemical factories that made alkali products for the production of seltzer and fizzy lemonade also made alkali products for photographic products.

Other chemicals that drew photographers’ concern about their poisonous properties were bichromates, an odorless, crystalline salt (solid or powder) used as an agent in painting, printing, tanning, and electroplating, among other arts. Potassium bichromate was in general use in the everyday practice of many photographers, mainly in such processes as gum printing, carbon-printing, and practically all photo-mechanical reproductions. As little as fifteen grains of potassium bichromate was enough to cause serious illness. The major problem, however, was that the chemical was inhaled from the polluted air and absorbed through cuts and abrasions in the skin, which were common to photographers in this era, who regularly handled glass beakers and slides.

Potassium iodide, used in fixing, was the cause of an accident in 1861, when two-year-old Henry Giblett died after swallowing a bottle of chemicals which he found in the van of an itinerant photographer while his guardians were having their portraits taken.³⁰ And in a widely reported incident in 1870, a photographer visited the Stoke-on-Trent workhouse to photograph its governor, Mr. M’Nish, and his family. He left behind a bottle of potassium iodide. When M’Nish asked for a glass of gin, his wife poured from the wrong bottle and her 56-year old husband died an hour later after violent retching.³¹ The reporters following this story recommended treatments such as drinking albumen, starch paste, or milk of magnesia.

Potassium cyanide accounted for more deaths among photographers than all the other hazards combined. This was a stock chemical in many nineteenth-century darkrooms, used as a fixer for negatives, and as a stain remover for spots and blemishes from drippings of silver nitrate. Yet despite the general awareness that cyanide could poison the body, either through cuts in the skin or by drinking it, photographers continued to use it for cleaning plates. Potassium cyanide was included as an ingredient in the waxed paper process of photographer Gustave Le Gray, as well as Roger Fenton, for producing greater sensitivity and blackness. It was also used as a method of fixing collodion plates. A textbook by J. B. Hockin, *Practical Hints on Photography*:

29 — *Photographic Times*, August 1874, 124–125, 125.

30 — ‘Child Poisoned in a Photographic Van’, in: *Photographic News*, 15 November 1861, 550. The report (reproduced from a local newspaper)

stated the chemical was potassium iodide, but the *Photographic News* editor added in a note that the lethal dose was probably cyanide of potassium.

31 — ‘Alleged Poisoning with Iodide of Potassium’, in: *Photographic News*, 7 January 1870, 11.

Its Chemistry and its Manipulations, published in 1860, also asserted the superiority of potassium cyanide over hypo (hyposulfite of soda, a chemical fixer), and claimed the use of cyanide as a “necessity” in the production of photographic positives (such as ambrotypes).

Potassium cyanide was not an essential ingredient in nineteenth-century photography, yet it accounted for hundreds, and probably thousands, of deaths. In many respects, it represented a puzzling phenomenon of risk-taking, and yet it led to news items which readily bring to the surface the *zeitgeist* of the age. As early as 1855, global photographic magazines widely reported that the photographer G.W. Greatrex narrowly escaped death when he made a pot of coffee from water that an assistant had polluted with a cyanide solution. Although Greatrex was violently sick, he guessed the cause, threw away the rest of the coffee, and drank the recommended antidotes – iron sulphate, powerful emetics, anything that induced vomiting, inhaling the vapor of ammonia, and cold water “poured from some height in a stream on the naked head, neck, and spine.”³²

While he was fortunate to live, many of the photographers who drank or absorbed cyanide through the skin died. For example, in 1860 one German photographer died after apparently losing his temper while cleaning a glass plate. The photographic journal reported that he “became suddenly transported with passion, and, in his madness, dashed the plate on the floor, and seizing a vessel of cyanide of potassium, poured it down his throat. He dropped as if he was shot, and died in half a minute.”³³ In 1865, *Photographic News*, in reporting two suicides from cyanide, commented that such deaths are “becoming lamentably common.”³⁴ Another journal asked: “When will cyanide be banished from the photographer’s laboratory? Every week we hear of somebody being either maimed, paralysed, or killed by this deadly, and, to a photographer, totally unnecessary poison.”³⁵

Reforming poison law and persisting dangers

In the wake of regular disease epidemics, including cholera, typhoid, and smallpox, the nineteenth century saw an emphasis on fresh air and ventilation in popular health and hospital design. In her book, *Notes on Hospitals*, published in 1859, the nurse and health reformer Florence Nightingale (1820–1910) advocated principles of fresh air from open windows for her patients.³⁶ Yet, these Victorian community principles of fresh air, sunlight, and clean tools were all generally lacking in the darkroom, as the photographic process required the use of exceedingly dangerous chemicals in often cramped, poorly ventilated and enclosed spaces. Where darkrooms were concerned, the less sun the better: ‘In the practice of photography’, wrote Désiré van Monckhoven in his 1863 *A Popular Treatise on Photography*, “three different rooms are necessary: one well lighted, in which the sitter is placed; another of commodious dimensions, which serves the purpose of a laboratory; and a third made quite dark, in which are performed all those operations which may not see the light of day.”³⁷ The contrast between the “operating room,” filled with light, was dramatically visualized in woodcuts that compared them with cramped, dark spaces (___fig. 7).

32 ___ *British Journal of Photography*, 1 June 1860, 160.

33 ___ ‘Poisoning by Cyanide of Potassium’, in: *Photographic News*, 9 November 1860, 335.

34 ___ ‘More Suicides with Cyanide’, in: *Photographic News*, 17 March 1865, 131.

35 ___ *Photographic Journal*, 16 November 1865, 200.

36 ___ Florence Nightingale, *Notes on Hospitals*, 1859. See Roy Porter (ed.), *The Popularization of Medicine*, London 1992; and John Woodward and David Richards (eds.), *Health Care and the Popular Medicine in Nineteenth Century England: Essays in the Social History of Medicine*, New York 1977.

37 ___ Désiré van Monckhoven, *A Popular Treatise on Photography*. Translated by W.H. Thornthwaite, London, 1863, 28.



fig. 7
 'The Glass, or Operating Room',
 woodcut in Désiré van Monckhoven,
A Popular Treatise on Photography,
 London 1863, 49.

Anxieties around the unregulated sale of increasingly potent chemicals grew in the nineteenth century, as captured in an 1849 *Punch* cartoon showing a young person buying (and drinking) over-the-counter laudanum in a chemist's shop that advertised: "All sorts of poisons constantly on sale" (—fig. 8). To regulate purities and impurities, new statutory laws were required. One such act was the Pharmacy Act of 1868 (31 & 32 Vict c 121), the first major legislation in Britain limiting the sale of poisons and other dangerous drugs to qualified druggists and pharmacists.³⁸ The bill was introduced in the House of Lords, which attempted to restrict the retailing of a list of dangerous substances to registered pharmaceutical chemists. All poisons had to be distinctly labelled. The bill was brought by Lord Granville, an established Liberal leader with a foreign policy background who owned coal and iron ore mines at Stoke-on-Trent and was the principal shareholder of the Shelton Iron and Steel Company. The bill was relevant to dealers in photographic chemicals, for it proposed to enact after 31 December 1868, that no persons shall keep open shop for "retailing, dispensing or compounding poisons" – or use the title "chymist" – unless they were a pharmaceutical chemist or had been apprenticed to a druggist as an assistant for at least two years before the Act. The Bill was not extended to sales of chemicals for use in photography, but proscribed poisons included arsenic, prussic acid, cyanides of potassium and mercury, and all poisonous vegetable alkaloids and their salts (ingredients sometimes used in amateur and professional photography). The article urged photographers to "keep an eye on the matter" to see that clauses were not introduced that would curtail the trade.³⁹

38 — Poisons not only were a major concern of the nineteenth-century. Their effects and detection reverberated into the early 1900s. See esp. Ian Burney,

Poison, Detection, and the Victorian Imagination, Manchester 2006; and Alexander Wynter Blyth, *Poisons: Their Effects and Detection*, London 1906.
 39 — 'Sale of Poisons', in: *Photographic News*, 29 May 1868, 263.



fig. 8
 'Fatal Facility; or, Poisons for the Asking', wood engraving in *Punch*, July-December 1849, 97.

There were also moves to establish the medical and pharmaceutical professions as separate, self-regulating bodies. Established in 1841, the Pharmaceutical Society had around 2,500 members out of a total of 25,000 drug sellers by the 1850s. The earlier Pharmacy Act of 1852 established a register of pharmacists and limited the use of the title to people registered with the society. In 1860, a rival society, the United Society of Chemists and Druggists, was set up to assert more control over drug distribution, after the proposed Poison Bills in 1857 and 1859 did not pass. The 1868 law emerged from a compromise among competing pharmaceutical companies and visions for drug delivery, amid public worries and pressure to regulate drugs at the point of sale.

As with other industrial occupations, establishing empirical proof and a pattern that could associate a specific disease with a particular photographic operation proved challenging – a problem that still plagues chemical workers today. Policy makers in this era were starting to assess the nature, significance, and proper role of statistical evidence. Photography was linked to a broader cluster of industrial diseases and urban conditions. Even after the rise of industrial hygiene and occupational health and safety in later years, the risks that were associated with privately owned chemical laboratories were circulated informally, often through trade magazines and journals and word of mouth. Throughout the

1870s, the photographic press continued to provide advice and serve up remedies for cures, as well as recipes for chemical emulsions. Photographers continued to write to the photographic press listing symptoms which they attributed to their photographic work. In these letters, they offered fellow photographers' rules and regulations for healthy lives from their own experiences.

A typical letter, published in 1870, read: "The winter of 1867–68 I had cyanide sores on my hands for several weeks. My family physician failed to heal them. I then, on going to bed, wrapped my hands in muslin wet in rain-water, and kept them wet all night from a dish by my bed. After three nights' treatment in this way they were well."⁴⁰ Occasionally, magazines opened their pages to physicians. In 1874, Dr. H. Napias agreed with others that "the profession of photography, like all others, has its inconveniences and dangers from a sanitary point of view." This was not unlike many other trades and professions, he noted, saying: "The exercise of every trade and profession brings with it a series of ailments or peculiar maladies which are oftentimes dangerous, and sometimes mortal."⁴¹

Like scientific researchers who performed experiments on themselves, photographers offered up their own bodies as sample demonstrations. In 1877, a photographer named J. H. Fitzgibbon boasted that he had been in the business for 36 years, 20 of which were spent in the darkroom. He supposed, "I have inhaled enough mercury

40 — 'Cyanide Sores', in: *Photographic News*, 18 March 1870, 131.

41 — H. Napias, 'Photography from a Sanitary Point of View', *Photographic News*, 19 June 1874, 297.

II.—POISON CHART

Poison	Means of Detection	Antidotes
Acids :—		
Acetic.	Smell.	Chalk, plaster off the wall and plenty of water.
Carbolic.	Smell.	*Zinc sulphate (25 gr.) and warm water.
Hydrochloric (muriatic acid).	Reddens litmus paper; turns silver nitrate solution white.	Chalk, plaster off the wall, large doses of water.
Nitric.	Reddens litmus; gives off brown fumes on heating.	Ditto. Ditto.
Pyrogallic.	Add a little alkali; shake and see if it turns brown.	*Zinc sulphate.
Oxalic.	Reddens litmus, turns tap-water milky.	*Zinc sulphate, followed by chalk or plaster and water.
Sulphuric.	Heat gently on paper and see if the paper chars.	Chalk or plaster off the wall, and very large doses of water.
Alkalis :—		
Ammonia.	} Smell.	} Large quantities of warm water, then vinegar and water.
Ammonium carbonate.		
Caustic potash.		
" soda.		
Carbonate of potash.	} Turn litmus blue.	
" soda.		
Solvents :—		
Petroleum and other mineral oils, including benzene, turpentine, etc.	} Smell.	*Zinc sulphate.
Chloroform.	} Smell.	Fresh air and artificial respiration.
Ether.		
Mineral Poisons :—		
Antimony compounds.	Add a little strong hydrochloric acid and dilute with large quantity of water; turns milky.	Antimony itself causes vomiting; follow by dose of strong tea.

* See note on p. 424.

POISON CHART

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POISON CHART—continued

Poison	Means of Detection	Antidotes
Mineral Poisons—continued		
Arsenic compounds (green paint, etc.).	Requires chemical knowledge.	*Zinc sulphate. Afterwards add a little diluted caustic soda to solution of green sulphate of iron, and administer the whole.
Bichromate of potassium.	Appearance.	*Zinc sulphate, followed by $\frac{1}{2}$ chalk and water after vomiting.
Cyanide of potassium.	Odour of almonds; dissolves silver: precipitated by hydrochloric acid.	*Zinc sulphate, followed by solution of green sulphate of iron, to which excess of weak caustic soda has been added. Artificial respiration.
<i>N.B.—Ferrocyanide, ferricyanide, and sulphocyanide of potassium are not poisonous in the ordinary sense.</i>		
Copper Compounds.	Appearance; gives blue solution with ammonia.	White of egg and plenty of water.
Gold " "	Appearance.	*Zinc sulphate.
Iodine.	Appearance and smell.	*Zinc sulphate, followed by boiled rice.
Lead compounds.	Hydrochloric acid turns solution white.	*Zinc sulphate, followed by $\frac{1}{2}$ oz. of magnesium sulphate.
Mercury.	Ammonia turns solution white; caustic soda or potash gives yellow.	*Zinc sulphate.
Oxalate of potassium.	Turns tap-water milky.	*Zinc sulphate.
Platinum compounds.	Appearance.	*Zinc sulphate.
Silver nitrate.	Hydrochloric acid turns solution white; clears again on adding ammonia.	Plenty of common salt and warm water.
Uranium compounds.	Yellow appearance.	*Zinc sulphate.
Zinc chloride.	Reddens litmus.	Chalk or plaster from wall and plenty of warm water.

* NOTE.—Where zinc sulphate is given as the antidote, 25 grains are always meant, dissolved in warm water. If zinc sulphate is not to be had, mustard and warm water will serve the purpose. It is intended as an emetic.

(" Figures, Facts and Formule of Photography.")

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SATURDAY WITH MY CAMERA

fig. 9
'Poison Chart', in Stanley Johnson,
Saturday with My Camera, London
1914, 423–424. Image courtesy of
Sara Dominici.

to make a shining mirror for others to reflect from, and if it could be possible for a chemist to extract the chemicals and compounds that have made acquaintance with the interior of my darkroom, he might get enough ether, alcohol, cyanide, iodine, gold, silver, bichloride of mercury, bromides and chlorides, acids, and other chemicals of minor note, to open a small stock depot at a small cost.”⁴² Fitzgibbon pushed back on the suggestion that chemicals necessarily sickened photographers, and challenged anyone to doubt his robust health. He tapped into the era’s penchant for entrepreneurial solutions: he thought the proper antidote was better ventilation and fresh air (although, as reformers noted, that was not necessarily available to all). He advised other photographers who suffered from fume inhalation to mix their chemicals outside the enclosed space wherever possible. He added to the growing list of bad practices in the darkroom: cleaning the fingers with cyanide, for one. He also advised photographers to keep their bottles tightly corked, and to rest during summer.⁴³

In the ‘Photographic Poisons and Their Antidote’ article published in *Photographic News* in 1877, the unnamed author described the symptoms of poisoning with sulphuric, hydrochloric, and nitric acids that were commonly used in photography as stomachache and vomiting.⁴⁴ Tables of poisons used in darkroom photography continued well into the 1910s (___ fig. 9).⁴⁵ Salts of mercury, particularly the bichloride which was called “corrosive sublimate,” were “to be found in every photographic studio, being commonly employed for intensifying negatives.”⁴⁶ In a crisis where it was not possible to remember the exact antidote, everyday substances such as milk could be used as an aid. As chemical experimentation accelerated with the proliferation of studios and consumers by mid-century, there was heightened awareness about the effects of prolonged exposure to chemical fumes more generally in small and large industrial spaces. Photographic magazines became a major source of popular health advice.⁴⁷ Egg whites – sometimes used in darkrooms along with collodion to coat plates, or to albumenize paper – were recommended frequently as a treatment for chemical poisoning in the darkroom. Experienced photographers also recommended treatment with vinegar or lemon juice.⁴⁸

The vast majority of late-nineteenth-century photographers were understandably worried about the dangerous chemicals which they daily handled. With the rise of gelatin silver processes, new chemicals were introduced into the photographic darkroom atmosphere, while traditional photographic chemicals – and associated harms – persisted. In April 1883, the body of a photographer was discovered by a policeman on the east side of Calton Hill, near Edinburgh, far from his hometown. An envelope was found in one of his pockets, on which it was written: “Have no work, no money, no friends and no place to sleep in tonight. W. Dickson, Photographer, April 12, 1883.” Alongside the body was a small bottle of potassium cyanide.⁴⁹

Silver nitrate, used for sensitizing paper, was also widely employed by photographers as a blackening agent to intensify the color of customers’ whiskers and moustaches. Silver nitrate poisoning rarely killed photographers; it was not very virulent

42 ___ J.H. Fitzgibbon, ‘Health of Photographers’, in: *Photographic News*, 16 March 1877, 129–130.

43 ___ Fitzgibbon 1877 (reference 41).

44 ___ ‘Photographic Poisons and their Antidote’, in: *Photographic News*, 4 May 1877, 207–208.

45 ___ Thank you to Sara Dominici for the reference.

46 ___ ‘Photographic Poisons and their Antidotes’ (reference 44), 37–38.

47 ___ *The Camera and the Darkroom*, 1904; Axel Melander, *A Miniature Photographic Darkroom*, 1922; E.J. Wall, *The Photographic Darkroom: Its Arrangement and Use*, 1933; Nestor Barrett and Ralph Wyckoff, *How to Build and Equip a Modern Darkroom*, 1940; Morris Germain, *Darkroom Handbook and Formulary*, 1940.

48 ___ ‘Photographic Poisons and their Antidote’ 1877 (reference 44), 207–208.

49 ___ *Photographic News*, 6 March 1868, 117.

and antidotes could be effective if taken quickly. In 1882, *Photographic Times* published an article claiming that, in a dilute solution, sulphuric acid (sometimes used in a weak form as a bleach for removing images, such as during retouching) could cure dysentery, hemorrhages, fevers, ulcerations of the throat, chronic inflammation of the joints, rheumatism, and skin diseases.⁵⁰ It was also advertised as a useful hair invigorator and effective in removing dandruff as well as preventing excessive perspiration of the feet. A photographer who identified himself as a “Vermont Yankee” from St. Johnsbury, Vermont (who almost certainly was Frederick Benjamin Gage (1824–74), inventor of the first photographic wagon on wheels, three years before Roger Fenton’s photographic wagon) claimed that silver nitrate had cured his chronic bronchitis.⁵¹

Another chemical that caused health concerns for darkroom photography at this time was pyrogallic acid, a common developer and a potentially deadly poison, of which many photographers were well aware. For example, in 1891, E. C. Tweedy, a well-known photographer in Baltimore, died after mistaking in the dim light of his darkroom a solution of pyrogallic acid for a glass of whiskey and water. Knowing the danger he was in, he immediately drank a powerful emetic, but this remedy was not effective and he died three days later. *Photographic News*, reporting this story later, reminded readers that “pyro” was a “virulent poison.” And, significantly, unlike cyanide and ether, which the chemist was scrupulously careful in handling and selling to customers (who had to sign their name in “the poisons book”), it was common to sell pyrogallic acid without a poisons label. As one photographic editor pointed out, it “would readily be handed to the smallest child without hesitation.”⁵² The focus, as with many dangerous products, was on the user, not the product.

The overriding impression from reading so many of these reports is that if some of these chemicals had not been so readily available, some of the victims might have recovered from their lapses into grief, spite, rage, or jealousy. In a contemporary ballad, William Baker, a “*carte-de-visite* taker,” falls in love with one of his sitters, Jemima Jenkins. She will have nothing to do with poor Billy, who decides to take cyanide:

*On suicide intent,
To the darkroom then he went;
But instead of cyanide he swallowed th’ hypo.
Although it gave him pain, He soon got well again,
But never flirted after in his stu-di-o.*⁵³

“It would seem,” said a contributing writer for *Photographic Review of Reviews* in 1895, “that the average dangers which the ordinary soldier has to encounter are not nearly so great as those which beset the photographer’s path. It is a wonder that any of us manage to live through it all.”⁵⁴ As late as 1901, when the collodion process had given way to the dry-plate, deaths from mercury poisoning still took place.

A deadly legacy

Using photographic trade journals, public health reports, and newspapers across the long nineteenth century sheds light on the nature and significance of violence in the darkroom and their impact on public perceptions of photography and chemical

50 ____ J.R. Gardner, ‘The Medicinal Uses of Sulphuric Acid’, *Photographic Times*, April 1882, 99–100.

51 ____ *Photographic News*, 2 February 1872, 50.

52 ____ ‘Notes’, in: *Photographic News*, 22 May 1891, 384.

53 ____ Reproduced in Jay 1991 (reference 11).

54 ____ ‘Health of Photographers’ 1877 (reference 42), 129–130.

labor. Practitioners and non-practitioners alike recognized a relationship between moral and chemical dangers. The darkroom was simultaneously understood as a place of discovery, foreknowledge and privileged access, and of deceitful manipulations and danger. Hopes and fears were entwined in this often-indeterminate space, where practices of photography were moralized. Furthermore, as I suggest in this paper, one of the moral debates ushered in by the darkroom's evolution in the nineteenth century was precisely over the acceptable level of harm to the workers. A new focus on darkroom diseases might engage two literatures that are often pursued outside photographic studies. First, it might explore especially what historian of science Michelle Murphy describes as the "landscape of exposure" in modern environments, with a particular focus on reimagining chemicals and chemical exposures, data justice and chemical informatics.⁵⁵ This might address the afterlife of industrially produced chemicals in colonial and urban infrastructures. Second, it might consider deeper exploration of how changing historical perceptions of the darkroom as a potentially dangerous artistic workspace interacted with narratives of safety and risk in the community as a whole. Historian Judith Walkowitz and others have shown how complex dramas of power, politics, race, class, gender, and sexuality played out across metropolitan streets of the late nineteenth century.⁵⁶ As literary scholar Susan Shelangoskie points out: "The professional spaces of photography are mapped onto sentimental plots as settings and commercial transactions are reimagined as romantic encounters resulting in new narratives of intimacy, authority, and propriety."⁵⁷

Further research on the performative aspect of darkroom work promises to shed light on the tacit knowledge of embedded rituals, and expand historical understanding about the role the darkroom played in popular imaginings of photography, and how (and where) broader narratives of "dangers in the darkroom" pulsed through nineteenth-century society. This should further illuminate the central role of the body in photographic practice and production of laboratory knowledge.⁵⁸

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55 ____ Michelle Murphy, 'Landscape of Exposure: Knowing and Exposure in Modern Environments', in: *Osiris*, vol. 19, 2004; and Michelle Murphy, *The Economization of Life*, Durham 2017.

56 ____ Judith Walkowitz, *City of Dreadful Delight: Narratives of Sexual Danger in Victorian London*, Chicago 1992.

57 ____ Susan Shelangoskie, 'Domesticity in the Darkroom: Photographic Process and Victorian Romantic Narratives', in: *Lit: Literature Interpretation Theory*, vol. 24, no. 2, 2013, 93–111, 94. Shelangoskie notes that "the social isolation demanded by the development process renders photography itself a competing term in the photographer's potential love plots", 99.

58 ____ Sheehan 2011 (reference 12) and Dominici 2021 (reference 9).