

TREATING MUSEUM OBJECTS AS TEXT: A CASE STUDY: PART 1

Kirsten Hebert

Heritage Services Specialist
The Archives & Museum of Optometry

khebert@aoa.org

ABSTRACT

Medical instrument collections are neglected primary source material that can be used to produce original scholarship on the history of medicine and the history of optometry. Opening museum collections and associated archives to researchers allows collections managers to simultaneously address curatorial backlogs, facilitate research, and provide a foundation for crafting public-facing exhibits. In order to add to the historiography, research should not only focus on the technical aspects of the instruments, but also employ theory to examine the meaning of the objects in context. In this way, objects can be a vehicle for understanding broader themes in the history of medicine and reveal their utility as material evidence of the impact of medicine on society and culture. In this article, an assemblage of ophthalmometers in the Archives & Museum of Optometry collection are treated as “text” to explore the nature of power in the doctor-patient relationship in early optometry.

KEYWORDS

medical museums; science museums; medical instruments; optometry history; history of medicine; ophthalmometer; keratometer; historiography; doctor-patient relationship; power theory; objects as text; object-based learning; museum education; medicine and society

INTRODUCTION: HOW *FROM THE MUSEUM* SUPPORTS OUR MISSION

I hope you enjoy the articles in the *From the Museum* section of *Hindsight*. The purpose of these articles is to provide our most devoted constituency with better access to the collections curated by The Archives & Museum of Optometry (AMO) and to introduce ways in which our collections can be used to generate new research in optometry history. Since the Optometric Historical Society (OHS) membership is geographically dispersed and the AMO collections are largely hidden, lacking either physical exhibit space or an online catalog, *From the Museum* provides the AMO and the OHS with a means of fulfilling parallel components of our missions: the exhibition of materials relating to the history of optometry. By drawing attention to the important role that the material culture associated with optometry plays in understanding the history of clinical practice, the historical impact of optometry on public health, and the evolution of optometry as a healthcare profession during the last century, *From the Museum* also helps support the mission of Optometry Cares – The AOA Foundation to enhance public awareness of optometry through education and research.

MUSEUM OBJECTS AS “DOCUMENTS”: FILLING THE GAPS OF A NEGLECTED HISTORIOGRAPHY

Science museums are filled with objects that are exquisite in design yet bizarre in form, functionally intact yet practically obsolete, and mechanically marvelous yet operationally mundane. These divergent qualities create a multitude of possibilities for exhibit designers to frame visitor interaction with artifacts. For medical museums in general—and those that hold collections related to instrument-dependent sub-disciplines like optometry specifically—objects may be used as a way to engage the public in thinking about the role of science and medicine in their own lives. Moreover, they can provide unique opportunities for conducting research on topics related to the history of medicine. Specifically, medical instrument collections comprise a body of invaluable and under-utilized primary source material for original scholarship on the history of technology and of material culture. In 1978, Audrey B. Davis, curator of the history of medicine collection at the Smithsonian Institution encouraged us to consider “the scientific and medical instrument as an historical document.”¹

Part 1 of this paper provides an overview of the current historiography on ophthalmic instruments, and outlines the methodology and theoretical basis for using ophthalmic instruments in museum collections as primary sources. Part 2 of this paper will treat one set of instruments in the AMO collection—our ophthalmometer assemblage—as

text in order to provide a new perspective on optometry history, to examine some larger themes within the history of medicine from the perspective of optometry, and to fill some gaps in the historiography of medical instruments.

Exploring the Gaps: Historiography of Medical Instruments

In his seminal 1951 book *A History of Medicine*, Henry Sigerist proposed that “the history of medicine is to a large extent the history of its tools”¹ Almost 30 years later, Davis observed that medical historians had failed to respond to Sigerist’s mandate: “The instrument has remained a neglected and peripheral source of historical evidence.”¹ (p.107) According to Ken Arnold and Thomas Söderqvist, who, like Davis, cite the research value of the surgical instruments in the Wellcome Library’s History of Medicine Collection, the contemporary historiography reveals little progress on this front: “the history of medicine...has largely ignored the importance of tools and instruments both for diagnostics and for therapeutic interventions.”²

Arnold and Söderqvist propose that the “seeming lack of reference to...the physical presence of the instruments used” implies that they “have been of peripheral importance” to medicine. For this reason, they contend, the history of surgery – and by extension we can conclude other medical sub-disciplines, like optometry, in which virtually *all* interactions between doctors and patients are mediated by instruments—is “relatively limited” at least within the history of medicine.² (p.729) It has been stated before that optometry history has been ignored by historians of medicine³ and while there are multiple reasons for this, the lack of emphasis on the importance of instruments may be a contributing factor which optometry historians should seek to rectify.

Narrowing the Focus: Historiography of Ophthalmic Instruments and the Missing Perspective

Of all the specialties, it may be true that ophthalmic instruments and devices have received a greater share of interest from historians than others, perhaps because of their close association with non-medical scientific instruments. Davis observed that the microscope is among the most well documented of all scientific instruments,¹ (p.113) and there is a close kinship between optical instruments used in the physical sciences and ophthalmic instruments used in refracting and examining the eye. It is worthy of note, however, that a decade prior to Davis’ claim, medical historian Savile Bradbury made the complaint that even the microscope had been overlooked by historians of science despite its obvious importance.⁴ Therefore, I think we are safe in making the assertion that instruments remain unexploited as objects of research in the history of medicine as a general

rule and that any original research constitutes a valuable contribution to the scholarship.

Most research that *has* been done on ophthalmic instruments is from the perspective of and for an audience of ophthalmologists. In some ways, this is not surprising; whereas the first American repositories dedicated to optometry came about in the 1960s, the American Ophthalmological Society designated the U.S. Army Medical Museum as its repository in 1901.¹ (p.119) Julius Hirschberg’s nine volume *History of Ophthalmology* was completed in 1917, while E.E. Arrington’s *History of Optometry* did not appear in print until 1929. The *Bulletin of the History of Medicine* launched in 1933 and has featured more than 250 articles on ophthalmology, but only six mentions of optometry appear in the journal and even these are restricted almost entirely to announcements, calls for papers and book reviews.⁵ Furthermore, the vast majority of journals that publish articles on the history of medicine are European, where the status of optometry is markedly different than it is in the United States. *Hindsight*, as the only history journal dedicated exclusively to optometry in the Americas, has only been publishing scholarly articles for a little more than a decade and in that time only eight research articles have been published that specifically highlight instruments and devices as objects of intensive study.⁶ Of course, history articles appear in journals that are not dedicated exclusively to historical research, but here also optometry suffers from a dearth of publications with a relatively short span of existence.

From the perspective of optometry history, there is another problem with articles emanating from ophthalmology: they often demonstrate bias with regard to optometry, either actively disparage it or ignoring it altogether.⁷ The disdain in Stuckey and Albert’s review of an appendix to *Julius Hirschberg’s History of Ophthalmology* (1981; 1986) is implied by the use of scare quotes in their assessment of Thilo von Haugwitz’s “The History of Optical Instruments for Examination of the Eye”: “[Haugwitz] begins with the ophthalmoscope and progresses to instruments of ‘optometry’, devices to measure light sense and instruments for measuring the anterior segment...devices for evaluating binocular vision...tests for malingering and illumination of the working area, and *inventions of peripheral importance to ophthalmology* [emphasis mine].”⁸ By contrast, other articles like Gutmark’s (2010) excellent work on the history of the keratometer simply neglect to mention optometry at all despite the central role keratometers have played in the objective diagnosis and treatment of astigmatism and contact lens fitting, and the work of early optometrists in refining the use and design of the instrument.

The obvious solution is for optometry historians to add to

their voices to the scholarship. In this way, we can contribute to a holistic historiography of the history ophthalmic instruments. To do this, however, it is important to use collections which are developed and curated for the purpose of documenting the history of optometry, like the AMO.

TOWARD A METHODOLOGY FOR MEANINGFUL INTERPRETION OF OBJECTS

Arnold and Söderqvist argue that museums are perfectly positioned not only to correct the lack of historical research on medical instruments, but also to broaden its scope. By opening their collections to researchers, and through exhibition and thoughtful interpretation “[museum objects] accompanied by real and specific personal details, along with the insight of real experts...can contribute to an important and distinctive historiography...a felt history of the process of medical practice and research...the process of treatment and discovery as well as all the failure, frustration, and blind alleys explored along the way.”^{2(p.729)}

This rings especially true for museums like the AMO which curate not only the exceptional, but also the broken, the discredited and the immediately outmoded as well as innumerable instruments with slight variations, claimed improvements, and those that are useful and not-so-useful composites. Furthermore, exhibitions of medical collections prove attractive to public audiences with a general interest in science and technology. Davis asserted that “the portion of the public which visits the Smithsonian Institution’s Museum of History and Technology expresses a pronounced interest in medical exhibits”^{1(p.112)} In our experience this has not changed since Davis’ writing in 1978 – our exhibits at the St. Louis Science Center and other educational programming, limited as it has been, is always well-received by audiences of all ages and backgrounds.

Research as Curation: The Importance of Ophthalmic Literature

There are challenges, however, to crafting exhibits to under-curated collections and historians of medicine can assist curators by performing research on museum objects as a way to support the development of exhibits and justify the preservation of research materials. As mentioned in previous articles in *Hindsight*,^{3(p.58)} medical and science museums and associated libraries and archives may be the only repositories which hold ophthalmic periodicals such as catalogs, trade publications, patents, manuscript collections of innovators, and other materials that assist us in researching and exhibiting instrument collections, and these resources are largely inaccessible and often undervalued. Four decades ago, Davis pointed to these materials as imperative to research on the Smithsonian’s history of medicine collection

and she actively set about putting together an assemblage to support her curatorial activities.^{1(p. 120-121)}

Ensuring the preservation of and long-term access to resources that allow us to describe and understand medical instruments in all of their complexity—technical, socio-cultural, economic and symbolic—is necessary because^{1(p.112)} the daunting challenge of adequately cataloging medical instruments and providing access to scholars has diminished very little in the intervening years. The methodology employed in this article is a case in point—part 2 is as much a curatorial exercise as an attempt to enrich the scholarship on optometry history and both of these endeavors required extensive use of ophthalmic periodical literature which is only made possible by my proximity to the collections. In many repositories, preservation and access priorities are a function of research demand, so the more optometry historians request access to and cite these collections the more likely they will remain available.

Going Beyond the Surface: Treating Instruments as Text

To be clear, Arnold and Söderqvist are suggesting that we do more than simply work up a chronological list of instruments or develop exhibits featuring progressively more refined innovations. Stuckey and Albert express fatigue at this treatment, critiquing von Haugwitz’s work as necessary but also “workmanlike” and “uninspired” having failed to do more than inventory instruments and provide less-than-detailed illustrations from trade magazines.⁸ We should, of course, provide biographies of innovators and designers and describe the function and mechanisms of instruments.

Additionally, however, in their analysis of surgical collections, Arnold and Söderqvist, with a nod to Geertz⁹ suggest we dig deeper and explore “the meaning of material things” both historically as medical instruments and immediately as objects: “Our point, then, is to argue for more consideration of the aesthetic, subjective, sensuous, and emotional approaches to instruments and suggest that science, technology, and medical museums and their collections provide privileged spaces where the aesthetic immediacy and historical meaning of artifacts can coexist and mutually enrich our appropriation of medicine’s past.”^{2(p.719)} This sort of examination can demonstrate the relevance of ophthalmic instrument collections to contemporary optometry practice and to the practice of medicine in general.

“How can medical museums use objects to examine the impact of medicine and its role in society?” and, moreover, “How can museums *make* an impact on the contemporary practice of medicine and its role in society?” are questions that curators of medical and science museums should be asking when crafting exhibitions and building collections.

In part 2 of this paper, I attempt to “read” a subset of medical instruments to examine what they can tell us about the doctor-patient relationship in the past and how this might inform our understanding of this dynamic in the present and future. This background research ultimately could provide a foundation upon which a public-facing exhibit may be developed using objects as a way to facilitate a dialogue between patients and doctors about how to negotiate care well into the future.

EXPLORING OBJECTS AND POWER

The Doctor’s Role in the Doctor-Patient Relationship

The doctor-patient relationship, more than almost any other in our fee-for-service economy, is characterized by an inverse power dynamic between the two participants. In “Medicine and the Doctor Patient Relationship” (2011), Mark Siegler proposes that a paradigm shift began to emerge in American medicine around the mid-century mark. Specifically, he traces the evolution of the doctor-patient relationship from one of paternalism distinguished by “patient dependency and physician authority,” to one of patient autonomy in which the “balance of power has shifted to the patient.”¹⁰

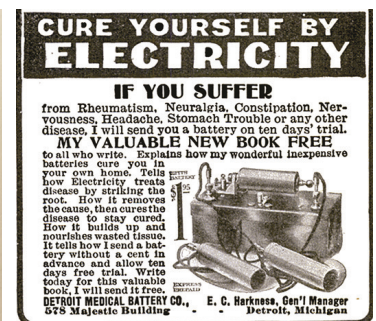
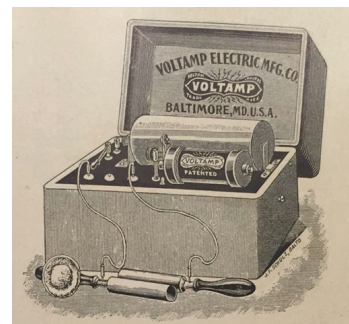
In analyzing late-20th and early-21st century medicine, Siegler correctly hones in on the growing intrusion of third-party payers in the relationship between doctors and patients.^{10(p.14)} He does *not* mention, however, how industry and manufacturers have always and continue to insinuate themselves into the doctor-patient dynamic through innovation and marketing. As they attempt to navigate an increasingly complex medical infrastructure and select the most suitable options from a growing menu of possible diagnostic techniques and treatments, I assert that the doctor and patient are not so much a couple as a foursome—the doctor, the patient, the payer and industry—with a complicated and constantly shifting locus of power.

Siegler further defines the “three simultaneous and intersecting” roles doctors have played within this dynamic in the history of the doctor-patient relationship as: “magical healer,” “applied scientist,” and, more recently, “bureaucratic administrator.”¹⁰ In light of the obvious influence of that manufacturers and insurers have played and continue to play in patient care, I propose a fourth category: doctor as “broker.” As economic historian Christelle Rabier argues, “medical practitioners” in the early 20th century “served as critical go-betweens in a ‘brokered world’ bridging patients and manufacturers.”¹¹ There is no doubt that optometrists during this period took to this role with alacrity.

Still, optometrists have always been particularly sensitive to labels of this sort, separating themselves early and often

from “spectacle peddlers” and variously sanctioning one another for providing free professional services to patients in exchange for the purchase of goods and for advertising their services. However, the connections between commercial trades, retailers and professional services have always been as close for optometrist in prescribing devices as they have for medical doctors prescribing pharmaceuticals or other treatments that involve more than a doctor’s manual manipulation of the body or recommended changes in patient behavior. Never was this truer than in late-19th and early 20th-century America, where burgeoning capitalism was seen as the motor of social progress and primary mechanism for improving public health and the human condition.

Mail order catalogs from this era are brimming with advertisements for tonics, devices and self-help programs that promise improved performance and cures for all manner of ailments real and imagined (Figures 1 and 2). It was in this environment that healthcare providers stepped in to mediate between patients and unscrupulous and untrained traders of cures and therapies.



Figures 1 and 2. Advertisements for electric shock treatments to treat disease. Circa 1900.¹²

Further, Rabier asserts that manufacturers—like those in the optical industry—who worked *with* doctors rather than going directly to the consumer were given a privileged role in shaping the practice of medicine and influencing the treatments doctors prescribed: “innovation in theoretical and practical medicine resulted from the translation of distinctive technological understandings [from manufacturers] ... into medical practice.”^{11(p.441)} Certainly in the modern era of optometry, analogs to this relationship can be found in optometry’s battle with contact lens retailers. Now, as then, doctors maintain that they are essential “brokers” in the provision of technology to patients and cultivate relationships with industry partners that respect this authority.

Instruments as Symbols of Power and Proxy: Connecting the Evidence to Larger Themes

Siegler’s and Rabier’s analysis provides a framework for

analyzing how medical instruments represent the role of the doctor in the power dynamic over time. As industry actively sought to enlist doctors as brokers between their innovations and patients, they courted doctors by offering instruments as a proxy for expertise. Doctors, in turn, used this conferred authority to reinforce their power. In this way, manufacturers played a significant role in structuring and reinforcing the paternalistic nature of the doctor-patient relationship. Medical instrument collections, then, constitute material evidence of how industry has used symbolic imagery and language to recruit doctors as a primary market to act as knowledge brokers who can translate their product to a secondary market comprised of patients. Therefore, an analysis of ophthalmic instruments as symbols provides insights about when and how these shifting roles evolved and how they were communicated to doctors and patients alike.

In the first half of the 20th century, newly minted optometrists were a species of healthcare professional gestated in the cradle of American mercantilism and born of advances in science and technology. In this way, too, optometrists offer something special to the study of ophthalmic instruments that their kindred in American ophthalmology may not. Whereas medical doctors resisted the use of instruments early on,^{1(p.124)} optometrists were more deeply invested both in the world of innovation and of commerce. For this reason, the study of ophthalmic instruments as used by optometrists is important on a number of levels. Not only can we see the doctor-patient relationship reflected in treating instruments as symbols, but we can also connect the history of optometry to a larger history of society. As Liba Taub notes in her article "Reengaging with Instruments": "The study of...instruments offers a special window on a significant era of intellectual culture of the early modern period, reflecting part of a larger...movement that combined learning, technical innovation, practical application, publication, manufacture, and commerce."¹³ Surely, this approach has much to offer the historiography of both the history of optometry and the history of medicine.

Museums as Neutral Ground: From Academic Research to Public Interpretation

Academic research on museum collections is important, but in order to make an impact on society we have to bridge the gap between academia and the public space. Sigerist states before that the doctor-patient relationship is predicated on power and that instruments symbolically strengthen the power of the doctor. Science and medical museums are ideal forums for examining objects that evoke a submissive response to authority when used in their normal context because, in the neutral ground of a museum exhibit,

all participants can pivot around these objects as a segue to conscious reflection on the nature of power.

Arnold and Soderquist analyze surgical instruments and I have suggested that these are a suitable analog for optometric collections, since both disciplines are "instrument-driven," but this is where the similarity ends. Surgical instruments differ entirely from those used by optometrists not only in terms of what they are designed to do, but also in the way in which they are deployed. While surgery is inherently invasive, optometry is often referred to as a "bloodless" profession and its practice requires almost no physical contact between the doctor and patient. Whereas surgical instruments are used on an unconscious patient, ophthalmic equipment requires not only consciousness, but also willing and active participation from and constant communication between the patient and the doctor. Furthermore, surgical instruments act as extensions of the doctor's body, growing "out of the original application of human digits" and "bare hands."^{2(p.721)} By contrast, ophthalmic instruments have no analog with the body of the doctor. The ophthalmometer in particular is exceptionally difficult to fathom as it uses light to *reflect* characteristics of the patient's eye which the doctor *observes*, and the instrument *measures*. From this relatively non-invasive process, correction of the body's function can be performed without palpation or probe. Furthermore, simply by virtue of its size and intensely mechanized form, ophthalmic instruments like the ophthalmometer physically separate the doctor and patient from one another in space. In this way, ophthalmic instruments do not facilitate intimacy with the patient as surgical instruments may be supposed to do. (Figure 3)

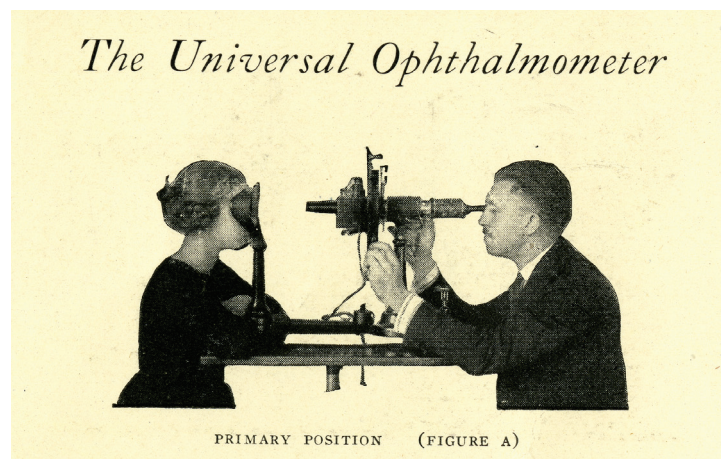


Figure 3. Image from General Optical Company's "Instructions for Operating The Universal Ophthalmometer, 1920. Image courtesy The Archives & Museum of Optometry. RG 100 AOA Records Collection, Series 145 Museum Records, Subseries 145.4 Historical Collections, Instrument Catalogs and Manuals, Box 5, Folder, Ophthalmometers.

Despite these dissimilarities, in both optometry and surgery diagnostic and therapeutic instruments are the principle points of engagement between doctors and patients. For this reason, while they are not as initially frightening and transgressive as surgical instruments, they are never neutral. Indeed, ophthalmic instruments used in eye exams facilitate and reinforce the power dynamic of doctors as actors and patients as those acted upon, particularly because the mechanisms by which they operate are so esoteric. While surgical instruments are easy to understand, ophthalmic instruments require very specialized knowledge of physics and mathematics. Furthermore, preventing patient access to knowledge (or possession) of instruments, their mechanisms and mode of operation have been a mutually beneficial practice of the medical instrument manufacturers and the medical profession,^{1(p.110)} both to protect patients from misuse and unnecessary alarm, and to reinforce their superior position as “experts” in the doctor-patient relationship.

By re-contextualizing ophthalmic instruments curators can mediate the discourse between doctors and patients, patients and instruments, and doctors and instruments, demystifying the machines and neutralizing the power dynamic. This, in turn, will allow us to re-examine the nature of and even re-negotiate the terms of the doctor-patient relationship. This is a salient topic now, as the internet has provided patients with unprecedented free access to medical research of varying quality and resulted in a resurgence of direct marketing of procedures and products to patients. In this increasingly transactional, patient-driven model of care, the doctor patient relationship is particularly fraught.

In part 2 of this paper, I will follow Arnold’s and Siegler’s lead and take a deep dive into an assemblage of 12 table-top ophthalmometers and keratometers curated by the AMO.

Continued in next issue...

REFERENCES

1. Davis AB. Historical Studies of Medical Instruments. *Hist Sci* 1978;16:108.
2. Arnold K, Söderqvist T. Medical Instruments in Museums: Immediate Impressions and Historical Meanings. *Isis* 2011;102: 720. doi:10.1086/663613.
3. Hebert, K. Rare Ophthalmic Periodicals: The Historiography of The Profession At Risk. *Hindsight: J Optom Hist* 2018;49:57.
4. La Berge A. The History of Science and the History of Microscopy. *Perspect Sci* 1999;7:111. doi.org/10.1162/posc.1999.7.1.111
5. The full text of the Bulletin of the History of Medicine is searchable by keyword and subject on the Johns Hopkins University Press website: <https://www.press.jhu.edu/journals/bulletin-history-medicine>. Search for “optometry” performed October 1, 2018.
6. The full text of Hindsight: Journal of Optometry History is searchable by keyword and subject on Indiana University’s Scholarworks website: <https://scholarworks.iu.edu/journals/index.php/hindsight/issue/archive>. Search performed October 1, 2018.
7. For example see Keeler R, Singh AD, Dua HS. Calculating curves: keratometers and ophthalmometers *Br J Ophthalmol* 2010;94:1144.
8. Stuckey KA, Albert DM. Hirschberg’s History of Ophthalmology. *Arch Ophthalmol*. 1987;105(6):758. doi:10.1001/archophth.1987.010600600440
9. Lingis A. Anthropology as a Natural Science Clifford Geertz’s Extrinsic Theory of the Mind. *Open J Philos*, 2014;4:96. doi: 10.4236/ojpp.2014.42014.
10. Siegler M. The Three Ages of Medicine and the Doctor Patient Relationship. In *Fundació Víctor Grífols i Lucas. c/ Jesús i Maria, eds. Monographs of the Víctor Grífols i Lucas Foundation. Barcelona, Spain, 2011:13*. Accessed 31 August 2018 at <https://www.fundaciogrifols.org/documents/4662337/4689077/monograph26.pdf/f5841492-7051-4cec-aa21-eb32a3ebc30c>
11. Rabier C. Introduction: the crafting of medicine in the early industrial age. *Technol Cult* 2013;54:437-459. Doi: 10.1353/tech2013.0090
12. Wexler A. The Medical Battery in The United States (1870–1920): Electrotherapy at Home and in the Clinic. *J Hist Med Allied Sci* 2017; 72:166–192, <https://doi.org/10.1093/jhmas/jrx001>
13. Taub L. Introduction: Reengaging with Instruments. *Isis* 2011;102: 694. doi:10.1086/663605.