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How to Cure a Horse, or, the Experience of Knowledge and the Knowledge of Experience

This essay is about horse medicine, or at least about the ways that horse medicine can help illuminate an interpretive problem within the field of the history of science. Chances are that you've heard quite a lot about one particular horse medicine lately, thanks to the popularity of the horse deworming drug Ivermectin as a (supposed) treatment for Covid-19. Despite multiple and increasingly dire warnings from medical authorities, the late summer of 2021 saw hordes of anti-vaccination activists swearing by Ivermectin as a far more effective treatment for the disease than the multiple FDA-approved vaccines available for free across the United States. Facebook groups such as "Ivermectin & how it worked for me" are overflowing with testimonies like one from a user on August 24, 2021, recording his experience taking Ivermectin after a positive Covid-19 diagnosis. This gentleman, who will remain anonymous in this essay, exercised his faculties of observation, dutifully recording his symptoms as they worsened over the course of ten days until he ended up in a hospital emergency room, where he was given an infusion of monoclonal antibodies. Did this experience affect his perspective on Ivermectin's efficacy? Hardly. He wrote on the day after his trip to the hospital that the problem wasn't Ivermectin, it was low dosage: "I needed 50 mg I was only taking 21. So I immediately took 50 mg. [. . .] I finally slept with my O2 levels staying up!!"[1]

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1. "Hey group I'm gonna do a full post and breakdown but I am currently on day 5 of Covid!" Facebook, August 29, 2021. www.facebook.com/groups/572130817318737/permalink/574360700429082

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The care and attention with which this Covid patient documented his illness reflects his deep belief in the evidentiary power of observation and experience for determining effective medical treatment—a belief that also, not coincidentally, undergirds double-blind clinical drug trials. But, of course, nothing about this man's experience with an experimental drug was double-blind, nor were his reports of Ivermectin's positive effects (which, as it turned out, were felt only after he received an infusion of Regeneron) any evidence of that drug's successful treatment of Covid-19. None of this is surprising, of course: Ivermectin is totally ineffectual against Covid-19. People like this man maintain their allegiance to the drug only as a result of their social, cultural, or political affinities. You wonder, perhaps, as I often do, how a whole-hearted belief in the efficacy of Ivermectin can hold up in the face of so much evidence—reported and experienced first-hand—to the contrary. How, in other words, can people practice the rituals of scientific observation while remaining totally immune to their supposed intellectual rewards?

Now, for comparison, let us think about a different kind of horse medicine—one that hasn't made the news lately. This sort of horse medicine was practiced throughout medieval Europe and is recorded in a number of vernacular medical manuscripts from fifteenth-century England, which happen to be the focus of my own research. In a society in which the horse was the primary and fastest mode of transportation around, treatises on the ailments and injuries that plagued horses were extremely popular. Some of these treatises focused on the holistic care for and training of a horse, while others were simply collections of recipes related to particular maladies. Many of these works remained popular for centuries. After the printing press arrived in England in 1476, one of the first "how-to" books to roll off the English presses was the *Proprytees & medicines of hors*, elements of which remained in print for over two hundred years.[2] For this essay, I'd like to pay closer attention to one particular manuscript full of horse medicine, now held in Cambridge University Library. As it happens, this manuscript contains a recipe for deworming a horse (exactly what the drug Ivermectin is approved to do), transcribed here with added punctuation and modernized spellings for ease of legibility:

2. *Proprytees & medicynes of hors,* STC 20439.5 (Westminster: Wynkyn de Worde, 1498). On the continuity of horse-care treatises from the medieval era to the early modern period, see George R. Keiser, "Medicines for Horses: The Continuity From Script to Print," *Yale University Library Gazette* 69, no. 3/4 (1995): 111–28.

> A charm for the worms in an horse. *In nomine patris et filii et spiritus sancti amen pater noster ave maria*. Lord that cedes virtue in stone, in word, in grass, send virtue in my words. Good Job him down laid and said three worms eat me: that one is white, the second is red, the third is black; that one eats my flesh, the other eats my blood, the third eats my bone. They were done dead so might these be. + *In nomine patris et filii et spiritus sancti amen*. Three times say this, first at the neck, then at the mid side, & then at crop [tail] with iii turns at every time, with a *pater noster ave maria* at every time, bend a penny over the horse head in the worship of Saint Loy.[3]

The method for deworming a horse recorded in this recipe shares a number of features with other popular medieval charms to treat human ailments like fevers or "agues" or bleeding wounds. Indeed, we could say that whoever compiled this manuscript in the mid–fifteenth century thought just as capaciously about horse and human medicine as did our Facebook-posting Ivermectin user, which is to say that the principles of healing established in this charm could be extended just as readily to humans as to horses. Indeed, though the majority of this manuscript is about horse medicine, there are a number of recipes for human ailments like sciatica and fever juxtaposed in and among the veterinary recipes. One recipe to cure fevers (agues, in Middle English) follows nearly the same rituals as the deworming charm transcribed above: the user is required to inscribe verses of scripture on a leaf and eat it, and to repeat this process for three days, reciting the *Pater Noster* and *Ave Maria* each time.[4]

So, it seems, horse medicine and human medicine were interchangeable in the Middle Ages, too. But that isn't really the lesson I hope to take from the juxtaposition of a series of Ivermectin-related Facebook posts and a medieval charm for deworming a horse. I don't wish to draw some kind of straightforward (and overly simplistic) analogy about our Ivermectin user as "medieval" in his recourse to superstition over science. I've read too many articles and listened to too many interviews in which well-meaning people criticize anti-vaccine movements as a return to the "Dark Ages" and as a totally "irrational" response to our present pandemic. That simplistic comparison is precisely the problem in how we understand the current phenomenon of disinformation and anti-science rhetoric among a considerable proportion of the U.S. population. Because we imagine that empiricism leads to reason, and that reason is precisely the thing that led us away from horse charms and toward clinically

3. Cambridge, Cambridge University Library MS Dd.4.44, f. 34v.
4. Cambridge, Cambridge University Library MS Dd.4.44, f. 29r

tested pharmaceuticals, then the misuse and misappropriation of those pharmaceuticals seems as irrational and "medieval" as the recitation of a charm that invokes the name of Job. But, as historians of medieval medicine know all too well, charms like the one transcribed above were absolutely rational within a particular premodern worldview predicated on certain beliefs.[5]

Everyone from the most learned natural philosophers to the local village healer in medieval Europe understood that God had endowed natural matter with properties that could ameliorate the human experience. The opening line of the charm for horses—"Lord that cedes virtue in stone, in word, in grass"—invokes that accepted premise and echoes an oft-repeated medieval proverb that man could access these God-given powers through the manipulation of natural materials (herbs and stones), *and* through the recitation of powerful words like the *Pater noster* or *Ave maria,* or even a charm for deworming a horse. There was some concern among medieval theologians about the demonic nature of made-up words, but all agreed that invocations to the saints, prayers, and recitations of established religious language could certainly effect healing. Natural philosophers like Thomas Aquinas or Albertus Magnus found an explanation for these phenomena in Aristotle, but for most, charms and other wonders were well beyond theoretical explanation precisely because they were manifestations of divine power, which worked in ways beyond man's comprehension. As both learned philosophers and ordinary physicians agreed, the efficacy of charms could only ever be proven by experience. Indeed, that was precisely their appeal: their presence in manuscript collections meant that *someone* had witnessed their authority and written them down for posterity.[6]

Our Ivermectin user shares none of these beliefs in the power of "words, herbs, and stones"—at least, as far as we can tell from his Facebook posts. To the contrary, his Ivermectin use stems from an appreciation for and trust in

5. Richard Kieckhefer, "The Specific Rationality of Medieval Magic," *The American Historical Review* 99, no. 3 (1994): 813–36. On the "irrationality" of the pandemic response as presented in popular media, see Katha Pollit, "The Age of Irrationality," *The Nation*, September 20, 2021. www.thenation.com/article/society/covid-denial-irrational

6. On the church and healing magic, see Catherine Rider, "Medical Magic and the Church in Thirteenth-Century England," *Social History of Medicine: The Journal of the Society for the Social History of Medicine / SSHM* 24, no. 1 (April 1, 2011): 9–13, https://doi.org/10.1093/shm/hkq110. On natural philosophical explanations for charms or other wonders, see Lorraine J. Daston and Katharine Park, *Wonders and the Order of Nature, 1150–1750* (New York: Zone Books, 2001), 127–28. On medieval physicians' justification of charms through the evidence of experience, see Lea T. Olsan, "Charms and Prayers in Medieval Medical Theory and Practice," *Social History of Medicine* 16, no. 3 (December 1, 2003): 343–66, on 351n43.

modern pharmacology. He is not living in the "Dark Ages" nor is the problem his lack of "belief" in science. The medieval compiler of that manuscript featuring the charm to deworm a horse and our Ivermectin user do not share the same views about the workings of the natural world. What they do share, however, is a tendency to valorize the witness or experiences of particular authorities over others. That Facebook poster's experience of Ivermectin—or *experimenta* in Latin, the root of our English word "experiment"—was conditioned by his own predisposition to grant authority to the other messages, videos, and fake news articles shared in that group. In the same way that the authority of witness conditioned a medieval reader's inclination to trust a charm for deworming a horse, it also conditioned our Ivermectin user to buck scientific research and self-prescribe horse deworming medicine for Covid. Being a part of that Facebook group granted him an experience of knowledge, by which I mean an experience of participating in a community of information exchange that was bounded, exclusive, and valorized by his fellow participants. His attempts to generate knowledge from experience—his performance of the rituals of close observation and notation, rituals at the foundation of modern medical practice—failed precisely because of ~~his~~ a experience of knowledge.[7]

And here is where I believe the recipe collections of the fifteenth century can help us to understand the spread and persistence of disinformation in the Covid era. Medieval and early modern recipe collections like those that I study are also evidence of premodern peoples' desire to participate in a community of information exchange that was bounded, exclusive, and valorized by a certain portion of their society. They represent peoples' experience of knowledge far more than they do knowledge born of experience. And yet, very often, disciplinary imperatives would have us see them otherwise. Historians of science are well versed in a narrative that locates the emergence of new attitudes toward natural knowledge in the centuries I study, attitudes that culminated (broadly speaking) in the development of the twin scientific practices of observation and experimentation. Recipe books, which survive in the thousands across later medieval and early modern Europe, seem like ideal sources for capturing this transition. Such books are a historian's dream: sources compiled not by stodgy

7. Ivermectin's defenders are quick to point out that it is a Nobel Prize–winning pharmaceutical: www.nobelprize.org/prizes/medicine/2015/press-release. On the precondition that scientific claims must be universal rather than bounded within a single group and the contrast between experience and experiment, see Peter Dear, "Miracles, Experiments, and the Ordinary Course of Nature," *Isis* 81, no. 4 (December 1990): 663–83. https://doi.org/10.1086/355544.

professors but by artisans, healers, or householders, texts that allow us to reconstruct the practices of manufacture, manipulation, and observation that yielded an epistemic breakthrough. Here and there in recipe books, we glimpse harried sixteenth-century mothers manufacturing medicines in their kitchens, trying to find a cure for their child's fever, or artisans testing various techniques for metal-casting or glasswork, applying years of accumulated hands-on experience to the manipulation of matter.[8]

Or, as is more often the case, we don't. In the vast majority of the recipe books I study from fifteenth-century England, I find very little evidence of nascent experimental practice, or indeed of any practice at all. Instead, the compilers of these recipe collections seem to have been swayed by the prestige and power of textual precedent. They wished to join a very old tradition in which natural knowledge was collected and preserved in books, because the most learned in medieval Europe prized book-learning above all else. In short, they valued the experience of knowledge—which is to say, the experience of partaking in an exclusive and very old tradition of writing about human bodies and the natural world—far more than the knowledge of experience. Certainly, for some of these collectors ~~and readers~~ of ~~useful,~~ natural knowledge, participation in this exclusive tradition *did* lead them to begin to value knowledge born from their own experience, too.[9] Gaining access to knowledge that had once been off-limits bred a fruitful kind of familiarity, a sense of ownership over that knowledge, which was the necessary precondition that enabled a few of these readers to grant their own observations equal authority.

But questioning received authority and relying on experience doesn't inevitably lead to progress or science—a fact made abundantly clear in the Facebook posts of our Ivermectin user. Experiential knowledge can be entirely

8. The field of recipe studies is vast and growing, but two of the most important recent works, which explicitly deal with recipes for household medicine (Leong) and craft manufacture (Smith et al.) are Elaine Leong, *Recipes and Everyday Knowledge* (Chicago: University of Chicago Press, 2018) and Pamela H. Smith et al., eds., *Secrets of Craft and Nature in Renaissance France: A Digital Critical Edition and English Translation of BnF Ms. Fr. 640* (New York: Making and Knowing Project, 2020), https://edition640.makingandknowing.org. On the broader epistemic shift toward experiment and observation, see Gianna Pomata, "Observation Rising: Birth of an Epistemic Genre, 1500–1650," in *Histories of Scientific Observation*, ed. Lorraine Daston and Elizabeth Lunbeck (Chicago: University of Chicago Press, 2011), 45–80.

9. On the interrelationship between authority born from textual precedent and authority born from experience in one exceptional fifteenth-century recipe collection, see Melissa Reynolds, "The *Sururgia* of Nicholas Neesbett: Writing Medical Authority in Later Medieval England," *Social History of Medicine* (2021). https://doi.org/10.1093/shm/hkaa099

shaped by cultural, social, political, or religious circumstances, a truth historians of science know very well. And yet, while historians of early modern science are often very keen to point out the social circumstances of knowledge production, the imperative to conform to an established origin story has us looking at recipes as evidence for a newfound interest in the knowledge of experience, when often what we find is the experience of knowledge.

This essay isn't an apology for conspiracy theorists and anti-vaxxers. Rather, it is a call to articulate more clearly in our own work that many of the practices we associate with science don't always or inevitably lead to scientific knowledge production. It is a call to articulate the messiness of quasi-scientific practices as they appear in the historical record, and to attend to the ways in which these practices *fail* as science as often as we celebrate some of them as origin stories. That entails being specific about what we call "science" and what we call "superstition," both then and now. Although our Ivermectin user might be anti-vaxx, he clearly isn't anti-science.[10] He deftly performed certain rituals of scientific observation and documented them in his Facebook posts. And yet we would never call his conclusions scientific. Likewise, though the charm for deworming a horse isn't science, it also isn't superstition. As historians of science, we should be able to identify the recipes, charms, and instructions in premodern manuscripts as indicative of an appreciation for the epistemic value of observation and individual experience without necessarily viewing these recipes as evidence of experimentation.

10. The fact that many scientific practices don't lead to knowledge production has of course been a preoccupation of philosophers of science for some time, perhaps most famously in Paul Feyerabend, *Against Method* (New York: Verso Books, 2010). On the problem of defining those who truly participate in science versus those who don't, see Michael D. Gordin, *On the Fringe: Where Science Meets Pseudoscience* (Oxford: Oxford University Press, 2021).