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A normal market

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ABSTRACT

Historical markets were often ones of symmetric but inaccurate information: buyers and sellers had similar information, but because knowledge was scant and unscientific, the information they had was false. These markets were “normal” in the same sense as classical markets of symmetric and accurate information. With hindsight, however, they are easily mistaken for markets of asymmetric information. I use novel data to study one such market: the market for patent medicine in Industrial Revolution England. I find that: (1) Patent medicine consumers and medical professionals had similar but false medicinal information. (2) Patent medicine ingredients and claims were consistent with professional medicine. (3) Patent medicine producers believed in their medicines’ efficacy and credibly informed consumers of their belief. Conventional wisdom that this market was deceptive perceives it with medical hindsight and thus misapprehends the market as one of asymmetric information. Viewed in the context of Industrial Revolution-era medical knowledge, the market for patent medicine was normal.

1. Introduction

Economists traditionally divide markets into two informational types: markets of symmetric and accurate information, and markets of asymmetric information. In the former, buyers and sellers have similar information, and the information they have is true. Examples include the market for towels, the market for potatoes, and other classical markets, where informational differences are limited to sellers’ superior ex ante knowledge of their products’ quality. Markets of this type are “normal” in the sense that economists generally regard them as well-functioning.

In markets of asymmetric information, in contrast, sellers have essential information that buyers do not have (or vice versa). Examples include the market for legal services, where buyers often do not know the extent of service they require; the market for taxi rides in an unknown city, where buyers often do not know what price they should pay; and the market for financial products, where buyers often do not understand the products they are buying. Markets of this type are prone to malfunction and thus receive substantial attention from economists.

The traditional division of markets neglects a third type that was ubiquitous historically: *markets of symmetric but inaccurate information*. Here buyers and sellers have similar information, but because knowledge is scant and unscientific, the information they have is false. Markets of this type are normal in the same sense as classical markets of symmetric and accurate information, differing

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only in the verity of what their participants know. Such markets were common in the past because knowledge in the past was often crude, hence accessible to all, and often what was known in the past is now known to be untrue. Consider, for example, the market for spellcasting in ancient Greece, for oracular consultations in preliterate societies, for bloodletting in early modern Europe, or for insulin shock therapy in midcentury America. In each of these markets, buyers and sellers had the same information. Their information, however, was wrong. Spells are not real; divination is not possible; bloodletting does not cure sickness; and daily insulin-induced comas do not treat schizophrenia.

With hindsight, markets of symmetric but inaccurate information often look like markets of asymmetric information. Given what is known today, it is hard to imagine people peddling spells, oracular consultations, or daily comas unless other people are being duped. But sellers in the past could know only what was known in the past—and when buyers knew the same thing, the market was one of symmetric, albeit often inaccurate, information. I study such a market: the market for patent medicine in Industrial Revolution England.

Patent medicines were medicaments brewed from private recipes and advertised to the public, the market for which was unregulated. I analyze that market using novel historical data. To examine the medicinal knowledge of patent medicine consumers and its relation to that of medical professionals, I analyze the healthcare literature in late eighteenth- and early nineteenth-century Britain. To examine the compositions of patent medicines and their relation to the medicines that medical professionals dispensed, I analyze the ingredients of more than 180 patent medicines divulged by late eighteenth- and early nineteenth-century British medical publications (Adair 1790; Gray 1821; Paris 1822; *Lancet* 1823; Rennie 1826). To examine the types and range of diseases that patent medicines claimed to treat, the effectiveness they claimed to possess, the use of testimonials in their marketing, their retail prices, and the characteristics of their suppliers, I analyze data collected by historian of medicine Alan Mackintosh (2018). Those data cover more than 700 unique advertisements for more than 300 unique patent medicines published in provincial newspapers across England between 1769 and 1822.

My analysis builds on Mackintosh's (2015: ii) argument that "the production, distribution and sale of patent medicines constituted a stable, substantial and largely respectable industry." I find that: (1) Patent medicine consumers and medical professionals had similar but false medicinal information. (2) Patent medicine ingredients and claims were consistent with professional medicine. (3) Patent medicine producers believed in their medicines' efficacy and credibly informed consumers of their belief. Conventional wisdom that this market was deceptive perceives it with medical hindsight and thus misapprehends the market as one of asymmetric information. Viewed in the context of Industrial Revolution-era medical knowledge, the market for patent medicine was normal.

My study contributes to the literature that debunks infamous market failures that never were. Ronald Coase's (1974) study of British lighthouses, for instance, revealed as fictitious the textbook exhibit of market failure due to public goods. Steven Cheung's (1973) study of Washington beekeepers and apple farmers uncovered as fable the classic illustration of market failure due to reciprocal externalities. John McGee's (1958) study of Standard Oil laid bare as lore the traditional example of market failure due to monopolistic predatory pricing. And Terry Anderson and Peter Hill's (2004) study of the American "wild west" exposed as myth the archetype of market failure due to incomplete property rights. In the same spirit, I debunk the widely held belief that Industrial Revolution England's patent medicine market was a failure due to asymmetric information.

Scholars outside economics routinely rebuke that market as a sea of phony products peddled by duplicitous hucksters to naïve consumers via false advertising (see, for instance, Cody 1999; Aronson 2009; Crawford 2012). And economists seem to agree: "Prior to the regulation of pharmaceuticals," one popular health economics textbook observes, "there were many accounts of salespeople marketing cures for all types of ailments to an unsuspecting public" (Sloan and Hsieh 2012: 286). According to another economist, "In the premodern era, false advertising was common," to wit, "touting the miraculous advantages of patent medicine" (Glaeser 2006: 137). Popular opinion echoes this trope, which is so ingrained that figurative speech uses the term *patent medicine* to connote that which is bogus or fraudulent (see, for instance, Krugman 1994).¹ I show that for Industrial Revolution England, at least, conventional wisdom about the patent medicine market is wrong. The market was not a grotesque failure due to asymmetric information. To the contrary, it was a normal market where information was merely incorrect.

My study's relevance for contemporary thinking about health economics and regulation is two-fold. First, it points to underappreciated limits on the received welfare economics of healthcare. Since the publication of Arrow, 1963 seminal paper, the idea that "Informational asymmetries pervade the health care sector and cause market failure" (Hurley 2000: 73), indeed, that such asymmetries "are inherent in the nature of...medical care" (Gaynor and Vogt 2000: 409), has served as a canon of health economics. Yet the premise on which that canon rests—"the complexity of medical knowledge" (Henderson 2012: 11), grasped by experts but inscrutable to laymen—is contradicted by Industrial Revolution England and, a fortiori, earlier societies, where medical knowledge was at least as crude. The received welfare economics of healthcare would thus seem inapplicable to most healthcare markets the world has known.

Second, my study helps clarify constraints on what regulation of healthcare markets can achieve. Scientific advance demolished the medical knowledge embodied in Industrial Revolution English patent medicine. Current medical experts thus regret most services and products that Industrial Revolution English medical experts endorsed. Yet insofar as scientific advance continues, future medical experts—perhaps in 200 years, perhaps in 20—will likewise regret some services or products that current medical experts endorse. In other words, we are to some degree always amid our own "patent medicine" episode, and unavoidably so since current experts necessarily lack the hindsight of future experts that informs where current expert knowledge is wrong. Market failures that arise from

¹ Such uses, like the quotations from economists above, do not refer to patent medicine in Industrial Revolution England specifically (rather, to patent medicine as such). Nevertheless, their characterizations of patent medicine, which do not except the market in Industrial Revolution England, comport with the characterizations of that market in the scholarly works by non-economists cited above.

asymmetric information arise because information is not symmetric, not because information is false. And while regulation may be able to address informational asymmetries, it cannot tell us where experts' information is wrong. "Patent medicine" episodes, therefore, are not market failures, and regulation cannot prevent them.

2. Patent medicine in industrial revolution England

England's Industrial Revolution extended from c.1750 to c.1830. During that period "the medicine business in Great Britain was unregulated by either guilds or government" (Jones and Vegotsky 2016: 1). On the demand side, "Any person could obtain quantities of even the most toxic material without constraint. There were no substances restricted...only on the prescription of a registered medical practitioner" (Anderson 2006: 107–108). On the supply side, "anybody could sell medicines" (Mackintosh 2018: 14) or make them. There were no substances restricted from use in or sale as medicine. Labels were not required. And "Producers were...free to make any claims that they chose about the effectiveness of their products" (Curth 2006: 6). The market for patent medicine was thus "an unrestricted free market" (Brown 2011: 3).

Government touched that market in just two ways. First, it taxed patent medicines. Under England's Medicine Acts, introduced in 1783 and last amended in 1812, patent medicines were charged a price-dependent stamp duty, and their vendors an annual fee. This tax "was one of a number of stamp duties imposed on a diverse range of commodities...unambiguously introduced to meet urgent national financial exigencies" (Stebbing 2018: 33).² Second, beginning in the seventeenth century, England's government sold letters patent that granted self-declared inventors a 14-year monopoly on their products. The name implies that *patent* medicines were among those products. With few exceptions, however, they were not. Just 10 of the 1300 patent medicines subject to tax in 1830 enjoyed patent protection, and just 115 medicines had ever been patented since the very first one in 1698 (Mackintosh 2017: 27). Even these medicines, moreover, were free from government oversight. "[T]he patent office had no system in place to investigate the patentee's claims of novelty" (Jones and Vegotsky 2016: 9). Nor did the patent office evaluate product efficacy or safety. Patent medicine, therefore, is a misnomer. It is, however, the usual term for such medicines, so I call them patent medicines too.³

I analyze the market for patent medicines using data that Mackintosh (2018) collects from their newspaper advertisements published in the first six months of 1769, 1781, 1794, 1807, and 1822 in *Aris's Birmingham Gazette*, *Leeds Intelligencer*, *Leeds Mercury*, and *Salisbury and Winchester Journal*.⁴ These data reflect the first appearance of every patent medicine promoted in an advertisement of at least four lines in each newspaper-year. They cover 720 unique advertisements for 323 unique patent medicines and furnish information on the disease indications those medicines claimed, the effectiveness they claimed, the consumer testimonials they claimed, their retail prices, their producers, and their wholesalers. In the fact that they were advertised, the patent medicines in this sample are representative of Industrial Revolution English patent medicines in general. "[A]dvertised medicines" were synonymous with patent medicines in Industrial Revolution England (see, for instance, Prosser 1977: 2), and having "been sold...by any public notice, advertisement, or hand bill" (Kearsley 1787: 88) was a defining characteristic of patent medicines under Industrial Revolution English law.

Table 1 uses Mackintosh's (2018) data to examine the consumer demands that patent medicines sought to fill. It considers the number of patent medicines, total and unique, that advertised indications belonging to each of 32 disease categories. Five hundred forty-two advertisements (and 243 unique medicines) contain indication information. Mackintosh assigns this information to disease categories based on British physician William Buchan's (1794) medical treatise *Domestic Medicine*.⁵ First published in 1769, by 1805 *Domestic Medicine* was in its nineteenth edition and had sold nearly one copy for every 100 residents of Great Britain, making it one of the best-selling books, medical or otherwise, in Industrial Revolution England. "The book certainly represents a fair sample of common medical opinion, lay and professional, at the beginning of the nineteenth century" (Carter 2012: 20).

Table 1 finds that patent medicines in Industrial Revolution England were marketed for the treatment of all but two categories of disease: inflammation of the brain, and cholera and excessive bowel discharges. Consumers could therefore find a patent medicine for almost any ailment. Four categories of disease were served particularly well, as Mackintosh (2018: 58) finds also. Thirty-one percent of patent medicine advertisements were for medicines that offered to treat scorbutic conditions; 24 percent, gout and rheumatism; 21 percent, bowel inflammation and bilious disease; and 20 percent, nervous diseases. Table 1 additionally finds that for the treatment of most diseases, patent medicine consumers had choice: the market was competitive. In 82 percent of disease category-years in which any patent medicine was advertised, multiple unique patent medicines were advertised. And in the average year, no fewer than 44 unique patent medicine producers advertised their products.⁶ Consumers thus chose not only among different patent medicines but also among different patent medicine producers.

² The tax, however, did inadvertently influence patent medicines in a few ways. One was by creating a legal recourse that patent medicine producers could use against counterfeiters. Producers often had their names and addresses printed on their tax stamps, and forgery of tax stamps was a felony. The tax also unintentionally helped patent medicine producers deter tampering with their products. By placing the tax stamp over the openings of their medicine containers, producers made it harder to open and reseal their containers undetected. Finally, by requiring the tax stamp to appear on medicine containers, the government may have unwittingly created the appearance of its approval.

³ Other terms for patent medicines include nostrums, quack medicines, and proprietary medicines.

⁴ In the eighteenth century the *Salisbury and Winchester Journal* was titled *Salisbury Journal*.

⁵ With two modifications: acute casualties (such as dislocation, suffocation, and drowning) found in Buchan are excluded, and the category of corns, which is not found in Buchan, is included.

⁶ "No fewer," because some medicines in the data do not have information on the producer, who therefore may or may not be unique.

Table 1
Disease Categories for Which Patent Medicines Were Advertised in Newspapers.

Disease category	Number of advertisements [unique medicines]					% of all ads
	1769	1781	1794	1807	1822	
Fevers, agues	7 [6]	11 [7]	8	4	8 [4]	7.01
Pleurisy, inflammation of the lungs	2	4 [3]	6 [5]	6	11 [6]	5.35
Consumptions	1	15 [11]	17 [11]	13 [8]	22 [17]	12.55
Smallpox	2	2	2	1	4 [3]	2.03
Measles, scarlet fever, bilious fever	1	1	2	1	8 [5]	2.40
St. Anthony's Fire		7 [3]	2	1	3 [1]	2.40
Inflammation of the brain						
Inflammation of the eyes	4 [2]	3 [1]		1	1	1.66
Quinsy, inflammation of the throat	1	6 [2]	4	2	10 [6]	4.24
Colds and coughs, whooping cough	6	21 [13]	13 [11]	20 [15]	34 [23]	17.34
Inflammation of the intestines, kidneys, bladder, liver; colic	6 [5]	24 [16]	18 [17]	26 [21]	41 [26]	21.22
Cholera and excessive bowel discharges						
Disorders of the kidney and bladder, diabetes, incontinence	6 [5]	20 [12]	8 [6]	10 [8]	11 [6]	10.15
Discharges of blood including in spit, vomit, and urine	1	3 [2]	3	3 [2]	5 [3]	2.77
Headache, toothache, earache	5 [3]	14 [8]	5 [3]	18 [14]	34 [19]	14.02
Worms	1	3 [2]	10 [6]	6 [5]	9 [6]	5.35
Jaundice		1	4	8 [7]	1	2.58
Dropsy including ascites and hydrocephalus		4 [3]	8 [7]	4 [3]	5 [4]	3.87
Gout, rheumatism	11 [9]	40 [24]	25 [18]	20 [12]	33 [20]	23.80
Scurvy, leprosy, scrophula, king's evil, itch	12 [8]	46 [27]	35 [23]	36 [24]	40 [26]	31.18
Asthma	1	12 [8]	12 [9]	17 [12]	22 [17]	11.81
Apoplexy			1	1		0.37
Costiveness, loss of appetite, indigestion, heartburn	5 [4]	9 [7]	11 [10]	16 [11]	32 [22]	13.47
Nervous diseases	13 [10]	24 [16]	14	28 [19]	31 [20]	20.30
Disorders of the senses	3 [2]	4 [2]	2 [1]	5	6 [3]	3.69
Scirrhus and cancer		3 [2]	4 [3]		2	1.66
Poisons including bite of a mad dog	1	3	1			0.92
Venereal disease	3 [2]	22 [13]	8 [5]	9 [6]	7 [2]	9.04
Specific diseases of women	3	13 [9]	9 [7]	6 [5]	2 [1]	6.09
Specific diseases of children including croup, teething, rickets, convulsions, water on the head	1	6 [3]	3	4 [3]	5 [3]	3.51
Surgery including wounds, fractures, burns, bruises, leg ulcers, sprains, strains	6 [4]	17 [8]	11 [8]	11 [7]	16 [10]	11.25
Corns	1	3 [2]	3		3 [1]	1.85

Notes: Data from [Mackintosh \(2018\)](#). 542 ads total. Disease categories (except corns) based on [Buchan's \(1794\) Domestic Medicine](#). Number of unique medicines in brackets.

Fig. 1 examines the distribution of patent medicine retail prices (in shillings). Six hundred twenty-nine advertisements provide prices, which include the stamp duty (applicable after 1783) and are for the smallest quantity of medicine advertised (for liquids, half a pint). Two features stand out. First, patent medicine prices varied little over the Industrial Revolution. Mean advertised price in 1769, 1781, 1794, 1807, and 1822 was 3.11 s, 2.94 s, 3.68 s, 3.71 s, and 3.73 s respectively. Second, patent medicines were expensive. In the 1780s, the average daily wage in England was less than 1.66 s ([Clark 2010](#)). Even the smallest quantity of a run-of-the-mill patent medicine therefore cost the average Englishman nearly two days' pay, and an expensive medicine cost him a week's pay or more.

Despite their expense, patent medicines were very popular with English consumers. "The demand for them seemed insatiable" ([Stebbins 2018: 21](#)). A successful patent medicine moved thousands, even tens of thousands, of units per year. No fewer than 19,548 packets of James' Fever Powder, for example, sold in 1769 alone ([Crellin 1974: 142](#)). Similarly, in 1790, the producer of Velnos' Vegetable Syrup averred sales of 20,000 bottles per year ([Swainson 1790: 10](#)). By 1810 an estimated 2.2 million containers of patent medicine were being bought and sold annually in England and Wales ([Mackintosh 2018: 32](#)), whose combined population was less than 10.2 million ([Mitchell 1962: 8](#)).

3. The myth of patent medicine deception

The market for patent medicine in Industrial Revolution England is widely regarded as deceptive (see, for example, [Cody 1999](#); [Aronson 2009](#); [Crawford 2012](#)). That view is based on four (mis)perceptions of the market. (1) Asymmetric information: patent medicine consumers were ignorant about medicine compared to medical professionals. (2) Fly-by-night suppliers: patent medicines were produced and sold by ephemeral, anonymous hucksters. (3) Fraudulent products: patent medicines contained no medicine, only useless or dangerous ingredients. (4) Fraudulent marketing: patent medicines were advertised as panaceas, as infallible cures, and with phony consumer testimonials. [Sections 3.1-3.4](#) evaluate each perception respectively.

3.1. Asymmetric information

I evaluate the view that Industrial Revolution English consumers were ignorant about medicine compared to medical professionals by examining the healthcare literature in late eighteenth- and early nineteenth-century Britain. "[I]n those days before laboratory

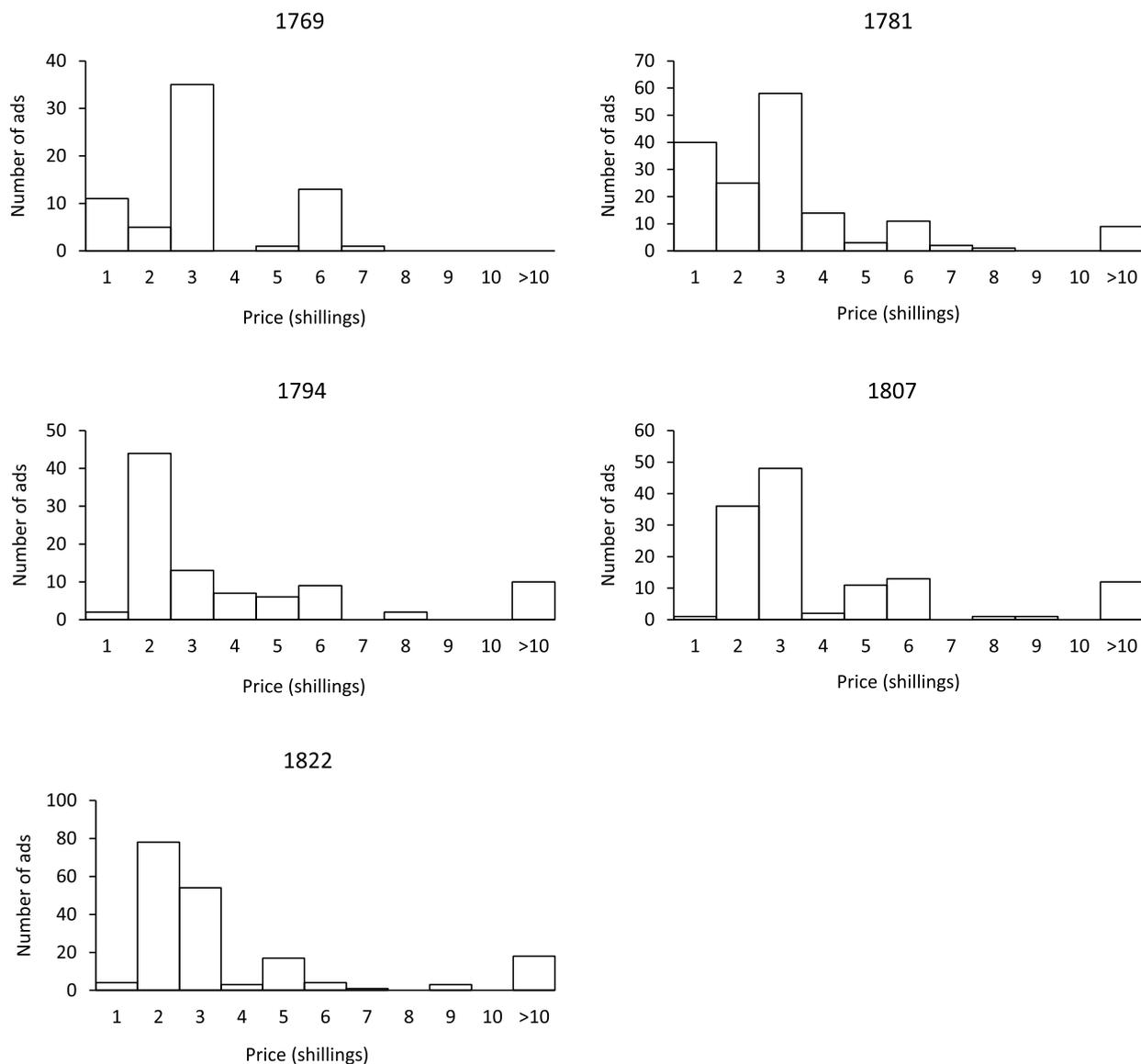


Fig. 1. Distribution of Patent Medicine Retail Prices in Newspaper Advertisements. Notes: Data from Mackintosh (2018). Prices are for smallest quantity of medicine advertised and include stamp duty.

medicine, medical knowledge was necessarily a currency common to both doctors and patients rather than being the practitioner's esoteric monopoly" (Porter 1985: 287). Also in those days, medical knowledge was usually wrong.

The germ theory of disease was not formulated, let alone widely accepted, until nearly 40 years after the Industrial Revolution ended, and viruses were not discovered until 1892.⁷ Before then, what medical professionals considered "diseases were merely the disordered state that comprised the symptoms" (Carter 2012: 21). Industrial Revolution English "medicine did not view disease itself as a 'specific,' but as 'dis-ease' or 'dis-temper,' marking a general imbalance of the humours, a disorder of the digestive system, nerves, or blood. Hence, drugs were typically expected to perform indirect services" (Porter and Porter 1989: 163)—to alleviate symptoms by, for example, purging the patient, causing him to vomit, or causing him to sweat. "[M]edical knowledge about drug action was largely empirical and derived from anecdotal evidence." And "when the symptoms were alleviated the treatment/medicine was considered to be successful" (Jones and Vegotsky 2016: 44, 1).⁸ Medicinal knowledge was therefore crude and highly accessible. It required

⁷ "[W]hat came to be debated under the heading 'germ theory of disease' did not emerge as a distinctive set of propositions until at least the late 1860s, and even then, the meanings ascribed to the phrase evolved dramatically between 1870 and 1885" (Tomes 1997: 23).

⁸ Indeed, "Hippocratic precepts"—the doctrine of the four humors—"loomed large until the nineteenth century was well advanced" (Bynum 1994: 18).

information only about symptoms and the substances typically used to alleviate them.

“Adages about health and sickness and data about regimes and remedies circulated throughout society, passed round and handed down by word of mouth” (Porter 1989: 36). Similarly, “Instructions to make medicaments for all sorts of ailments and illnesses were exchanged during social visits, circulated in letters, and were recorded into bound notebooks” (Leong and Pennell 2007: 138). The widest dissemination of medicinal information, however, was through published print: magazines, journals, and books, which comprised the enormous and enormously popular healthcare literature in Industrial Revolution England. “Literally hundreds of books came on the market” from this genre, “*The Family Physician...The Poor Man’s Medicine Chest...Physick for Families*” (Porter 1992: 106) and Buchan’s *Domestic Medicine*, to name but a few. “Health-care books were bought by the thousand” and were staples of the Industrial Revolution English household, “commonly shelved next to the family Bible” (Porter and Porter 1989: 200, 33).

Such works “acted as exchanges—from laymen to laymen, from doctors to laymen—of medical information: diagnostic, therapeutic, pharmaceutical” (Porter 1992: 106). In them, consumers could find the conditions from which they suffered, the treatments recommended for their conditions, the medicinal substances indicated as treatments, and those substances’ hazards and services: produces vomiting (emetic), produces sweating (sudorific), purges (purgative), kills pain (anodyne). Here “The literate public could gain its medical information—indeed, even have its medical problems settled” (Porter and Porter 1989: 197). And often it did. The result was a medicinally well-informed public.

“A person ignorant of self-care would have been equivalent to a woman unable to bake...or a gentleman who could not ride” (Porter and Porter 1989: 35)—in other words, exceptional. “[T]he level of lay medical erudition...could be remarkably high” (Smith 1985: 255). Consider the *Gentleman’s Magazine*, a monthly periodical that was part of Industrial Revolution England’s healthcare literature to which both laymen and medical professionals contributed. “In most cases...it is impossible to judge whether [entries] have been written by members of the faculty or by lay authors. This is largely because contributions by lay and medical men alike are typically pitched at comparable levels of assumed medical expertise. And that level is remarkably and impressively well-informed” (Porter 1985: 293).

That “every thing valuable in the practical part of Medicine [was] within the reach of common abilities” (Buchan 1790: xvi) was for many medical professionals an unwelcome fact. Because consumers could also purchase any medicinal substance that doctors could, “doctors were competing with the sick themselves for the treatment of illness” (Porter and Porter 1989: 209). Often that meant doctors were competing with patent medicines since, as considered above, patent medicines were a popular form of self-treatment. “To the medical professional,” then, “the sale of proprietary medicines was objectionable...Their large-scale use meant that a substantial area of medical activity escaped control by the profession...And the competition could be seen in financial terms” (Brown 1987: 217). Medical professionals thus tended to be hostile toward patent medicines in their rhetoric (though not in their behavior, as I consider below) and often frowned on self-treatment more generally. Doctors “tried to convince their clients that drugs were not sufficient in themselves, but became efficacious within the framework of a wider regime, whose rationale only the doctor fully understood” (Porter and Porter 1989: 161). Yet “Ordinary people thought, with good reason, that they could understand illness and treat it just as effectively” (Holloway 1991: 57) since usually they in fact could.

“As access to information about treatments was widely available, many patients actively diagnosed their own illnesses” (Jones and Vegotsky 2016: 2). A physician might be consulted also, but typically to confirm the patient’s conclusion, for often he could offer little else. On the one hand, as discussed above, “doctors approached disease in terms of the symptoms the patient experienced” (Bynum 1994: 20). And on the other hand, “the medical man based his treatment on what the patient told him about his illness, rather than on signs he could make the patient’s body give” (French and Wear 1991: 3). Before “The routine of physical examination appeared around the mid-nineteenth century,” physicians “scarcely touched their patients” (Loudon 1986: 19, 20). Thus, “What the doctor ordered often differed little from what common sense dictated” (Porter 1993: 62). And what common sense did not dictate, the household health manual often would. Medical professionals still played an important role in supplying healthcare in Industrial Revolution England. Certain kinds of care such as surgery, bloodletting, and smallpox inoculation only medical professionals could provide. Patients did not always feel confident diagnosing or treating themselves. And a doctor was likely to be called upon if self-treatment failed. Self-treatment, however, normally came first and often in the form of patent medicine.

The healthcare literature, accordingly, also contained information about patent medicines, including their ingredients. Patent medicines’ “secrecy,” which I expand upon in Section 3.3, did not keep consumers from knowing generally what was in them. On the contrary, “there was probably little mystery about their main ingredients. Recipes were given in popular medical books” (Brown 1976: 153–154). And “Buyers were often aware that nostrums...contained ingredients essentially identical or comparable to the remedies doctors prescribed” (Porter and Porter 1989: 107)—a sameness I document in Section 3.3. Between word of mouth and medical books, the principal ingredients in many patent medicines’ “secret formulas circulated widely through both public and private domains” (Storm 2018: 43). Consider Daffy’s Elixir. “[D]espite all the efforts of Daffy and his family to keep the recipe to themselves, it soon slipped out and began to circulate around the extensive networks through which medical knowledge, and particularly prescriptions, were diffused...By the early eighteenth century it even appeared in official publications...for example, in the College of Physicians’ official *Pharmacopoeia Londinensis*” (Haycock and Wallis 2005: 30). Ironically, there was probably more mystery about a medicament’s composition when it was dispensed by a medical professional: “physicians wrote their prescriptions in Latin, a language that the majority of their patients did not understand” (Helfand 2002: 23).

The healthcare literature indicated the recommended doses of different medicaments for different conditions. But consumers did

not have to look there to get this information for patent medicines, which came with their own printed “directions, either sold with the preparation or printed in the advertisement” (Cox 2000: 213). The directions described the medicine’s uses, appropriate dosing, and how it should be administered. By furnishing consumers such information, patent medicine producers reduced the former’s cost of obtaining it. In this way, producers, too, contributed to a medicinally well-informed public.

The medicinally best-informed consumers in Industrial Revolution England were the reasonably well-to-do and literate, for whom the healthcare literature was serviceable directly. Those are also the consumers to whom patent medicine producers marketed their products. While patent medicines were consumed widely in Industrial Revolution England, “sales were particularly strong in the middle and upper levels of society” (Mackintosh 2018: 33). Patent medicine producers “pitched at those sufficiently literate, urban, in-touch, and affluent to be reading newspapers” (Porter 1989: 47), where they advertised their medicines. The price of their medicines also indicates that “the clientele for...their products was stable and sophisticated” (Porter 1989: 51). As Fig. 1 shows, patent medicine prices were high, suggesting buyers who were wealthy enough to afford them. “Nostrum-mongers certainly seem to have assumed that potential buyers could afford, and would be prepared to fork out sums in shillings rather than pence” (Porter 1989: 142). High prices, moreover, encouraged consumers to do their homework before purchasing patent medicines. “Buying and taking a patent medicine was a serious, potentially lengthy, and often expensive affair, not a sudden fancy” (Mackintosh 2018: 189). Patent medicine consumers, therefore, were not ignorant about medicine compared to medical professionals. They were Industrial Revolution England’s savviest medicine consumers, selected from a public whose medicinal information, while inaccurate, was similar to that of medical professionals.

3.2. Fly-by-Night suppliers

I evaluate the view that Industrial Revolution English patent medicine suppliers were fly-by-night operators by examining patent medicine suppliers’ longevity and whether they were publicly known. Decade after decade of voluminous patent medicine sales, considered in Section 2, implies that ephemeral, anonymous hucksters did not play a significant role in supplying patent medicine. That implication is supported by the data. Mackintosh’s (2018) sample contains 217 unique patent medicine suppliers: producers and/or wholesalers with whom they partnered. One hundred sixty-two suppliers appeared or had a partner who appeared in an advertisement in 1781, 1794, or 1807. For each of those suppliers, I see whether he or one of his partners reappeared in an advertisement in any other year. The sample dates are separated by intervals of 12 to 15 years. A supplier or one of his partners who reappeared was therefore active in the patent medicine business for at least that long.

Sixty-one percent of suppliers were still active or had a partner who was still active after at least 12–15 years, and some were in business much longer. Twenty-seven percent of suppliers themselves reappeared in advertisements, and on average, 21 years separate a reappearing supplier’s first and last appearance. Forty-nine percent of suppliers had a partner who reappeared in advertisements, and on average, 30 years separate the first and last appearance of a supplier’s longest-lived reappearing partner. Nenadic (1993) finds that between 55 and 59 percent of businesses in late nineteenth-century Edinburgh had a lifespan of three years or less. She adds that “in the first half of the century...similar demographic profiles seem to have prevailed” (Nenadic 1993: 91) in Britain. If so, Industrial Revolution England’s long-lived patent medicine suppliers were quite long-lived indeed.

The data also find that most patent medicine suppliers were publicly known. Ninety-four percent of suppliers in Mackintosh’s (2018) sample advertised their names. Eighty-eight percent advertised their locations, often with precise addresses. Similarly, patent medicine suppliers provided identifying information on their products’ containers, which likewise “included not only the producers’ names, but also the addresses at which the genuine preparation could be purchased” (Basford 2012: 76). Patent medicine suppliers, therefore, were not typically fly-by-night operators. Most were long-lived and publicly known or worked with other patent medicine suppliers who were long-lived and publicly known.

3.3. Fraudulent products

I evaluate the view that Industrial Revolution English patent medicines were fraudulent products that did not contain actual medicine by examining patent medicine compositions. To do so I collect data from late eighteenth- and early nineteenth-century British medical publications that divulged patent medicine ingredients. Foremost among those publications are John Paris’ (1822) *Pharmacologia* and James Rennie’s (1826) *New Supplement to the Pharmacopoeias*. Both works catalog materia medica and their uses by medical professionals in Industrial Revolution England.

Paris and Rennie were distinguished British medical professionals. Paris was a physician and medical researcher, an elected Fellow of the Royal Society, and served as president of the Royal College of Physicians. Rennie was a surgeon, a lecturer on chemistry, natural history and philosophy, and editor of the *Quarterly Journal of Foreign and British Medicine*. Paris’ and Rennie’s books, moreover, reflect the mostly hostile attitude toward patent medicines that, as discussed above, medical professionals in general projected rhetorically.⁹ Neither man, therefore, could be accused of being a shill for patent medicines. I supplement Paris’ and Rennie’s works with British physician James Adair’s (1790) *Essays on Fashionable Diseases*, British pharmacologist Samuel Gray’s (1821) *Supplement to the Pharmacopoeia*, and volume one of the famed English medical journal the *Lancet* (1823). Together these sources reveal the ingredients of

⁹ That rhetoric simultaneously disparaged patent medicines for being quackery and for being clones of the medicines in the College of Physicians’ official pharmacopoeias. The charge of “quackery” was one that competing medical professionals (and patent medicine producers) also leveled at one another. “Quack” was thus the ubiquitous swear-word” (Porter 1989: 2) of medical professionals.

181 patent medicines.¹⁰

I identify the principal ingredient in each. Nearly all the medicines contained multiple ingredients, the most significant of which is usually but not always obvious. Where there is ambiguity, I select the ingredient that seems likely to have been most powerful.¹¹ Identifying every medicine's principal ingredient narrowly would prevent summarizing ingredients and provide little additional information. I therefore identify principal ingredient classes. *Mercury*, for example, refers to any mercurial mineral, compound, or preparation such as cinnabar, mercury chloride (corrosive sublimate), or calomel washed in alcohol. *Opium* refers to any opiate, and so on.

Table 2 presents patent medicines' principal ingredients. There are 54 in total. Every ingredient is also found in Paris (1822) and Rennie (1826) and thus was considered medicinal and used by medical professionals in Industrial Revolution England. The ingredients are of two basic types: those which are potent but hazardous, and those which are harmless but medicinally inert. For an example of the first type, consider mercury, the most frequent principal ingredient among the patent medicines in Table 2. According to the *Pharmacologia*, mercury was also "more extensively and more usefully employed [by medical professionals] than almost any other article in the whole range of materia medica" (Paris 1822: 245).¹² Further, medical professionals and the patent medicines that contain mercury in Table 2 sought to use mercury in the same ways. According to the *Pharmacologia*, mercury "is often very serviceable" for treating "obstinate cutaneous diseases," for "curing syphilis in every form," and is "particularly eligible in the diseases of children" (Paris 1822: 238–239, 245).¹³ Likewise, the patent medicines that contain mercury in Table 2 offered to treat skin conditions, venereal diseases, or worms, which were common in children.

For an example of the second type of principal ingredient found in patent medicines, consider rhubarb. By modern medical reckoning, this vegetable substance is medicinally useless. Yet by medical reckoning in the late eighteenth and early nineteenth centuries, rhubarb was medicinal. "In this substance," the *Pharmacologia* informs, "Nature presents us with a singular and most important combination of medicinal powers, that of an astringent, with a cathartic property" (Paris 1822: 363). Patent medicines, therefore, were not typically fraudulent products that contained no medicine. The dangerous or inert ingredients they contained were then considered medicinal, and "In the nature of their composition they were blood brothers of preparations in the various pharmacopoeias" (Griffenhagen and Young 1959: 167; see also, MacLeod 1988: 85).¹⁴

Additional evidence that patent medicines were not fraudulent products is found in the fact that medical professionals, despite their hostile rhetoric, often used patent medicines to treat patients. "Indeed, it was a matter of remark how extensively regular physicians themselves prescribed nostrums" (Porter 1988: 7).¹⁵ Anderson's Scots Pills, Dover's Powder, Godfrey's Cordial, and other patent medicines were part of the regular medicinal armory on which late eighteenth- and early nineteenth-century English medical professionals relied. Ward's Pills and Drops became standard issue in the British Navy. Further, while most Industrial Revolution English patent medicines were owned by tradesmen, perhaps 30 percent were owned by medical professionals (Mackintosh 2018: 104).¹⁶

It is easy to imagine that patent medicine secrecy was used to hide fraudulent ingredients from consumers. That, however, is wrong since, as shown above, patent medicine ingredients were not fraudulent. Patent medicine producers did not disclose their recipes for the same reason that Coca-Cola does not: to protect the subtle differences that distinguished their products from the competition in a marketplace crowded with products that contained the same, widely known principal ingredients.¹⁷ Patent medicines, everyone knew, were merely "the standard materia medica of the pharmacopeia—above all, opiates, mercurials, and antimonians—dolled up in fancy dress" (Porter 1989: 6). Differences in how one producer's patent medicine was dolled up—slight variations in flavor, scent, consistency, color, excipients—were therefore all that distinguished it from the medicines of his competitors. As late eighteenth-century

¹⁰ Any medicine identified by at least one source as a patent medicine is counted as such (non-medicinal products, such as perfumery and ink, are excluded). In a minority of cases the identification is indirect. For example, Paris (1822) identifies Friar's Balsam as a patent medicine, and Gray (1821) identifies Vervain's Balsam with Friar's Balsam. I therefore count Vervain's Balsam as a patent medicine although Gray does not identify it (or Friar's Balsam) as a patent medicine explicitly. Similarly, Paris identifies Ward's White Drops, Ward's Red Drops, Ward's Sweating Powders, Ward's Paste for Fistula and Piles, and Ward's Essence for the Head-Ache as patent medicines, and Gray presents ingredients for Ward's Antibilious Pills. I therefore count Ward's Antibilious Pills as a patent medicine although Gray does not identify it as one explicitly. Gray's book, in particular, contains several medicines that are not identified in any source as patent medicines (directly or indirectly) but may have been. Expanding the sample to include those medicines does not affect my findings.

¹¹ Different selections in such cases would alter the ingredient frequencies in Table 2 but not the ingredients that table contains. Spilsbury's Antiscorbic Drops, for example, contained (among other ingredients) mercury and antimony, both of which are powerful substances. I identify mercury as that patent medicine's principal ingredient. Antimony, however, is also found in Table 2 and is in fact one of the three ingredients that dominated patent medicine compositions, the other two being mercury and opium.

¹² Calomel specifically.

¹³ "Taking mercury to the point of salivation, sore gums and loose teeth was the traditional recommendation" (Bynum 1987: 16) of physicians in eighteenth-century England.

¹⁴ Patent medicines thus threatened the economic interests of medical professionals not merely in that they were a popular form of self-treatment but more seriously in that they were near-perfect substitutes for the medicines offered by medical professionals, many of whom were consequently eager to see patent medicines controlled or suppressed.

¹⁵ According to one patent medicine producer, "out of twenty thousand bottles a year, which is my average sale, two thirds are ordered directly or indirectly by the faculty" (Swainson 1790: 10).

¹⁶ Some of whom were accordingly denounced as "quacks" by fellow medical professionals.

¹⁷ Coca-Cola, coincidentally, was originally sold in late nineteenth-century America as a patent medicine containing coca-leaf extract (Tedlow 1996: 24).

Table 2
Patent Medicines' Principal Ingredients.

Alcohol [4]	Cardamom [1]	Ginger [1]	Opium [24]	Styrax benzoin [9]
Aloes [9]	Cassia pulp [1]	Guaiacum [5]	Oxymel [1]	Sulfur [2]
Ammoniacum [1]	Catechu [1]	Henbane [1]	Peppermint [1]	Turpentine [7]
Ammonium carbonate [1]	Charcoal [1]	Ipecacuanha [1]	Potash [6]	Vinegar [2]
Antimony [11]	Cinchona [2]	Iron sulfate [2]	Quassia [1]	White hellebore [1]
Armenian bole [1]	Cloves [2]	Lead [2]	Rhubarb [2]	Zinc sulfate [1]
Arsenic [7]	Copper acetate [2]	Lime [3]	Rose [1]	
Asarabacca [1]	Copper sulfate [1]	Liquorice [1]	Sage [1]	
Bitter almond [1]	Ether [4]	Magnesia [3]	Sarsaparilla [1]	
Black pepper [1]	Gamboge [1]	Meadow saffron [3]	Senna [5]	
Camphor [3]	Garlic [1]	Mercury [25]	Soap [4]	
Cantharides [1]	Gentian [3]	Olive oil [2]	Sodium sulfate [2]	

Notes: Data from [Adair \(1790\)](#); [Gray \(1821\)](#); [Paris \(1822\)](#); [Lancet \(1823\)](#); [Rennie \(1826\)](#). 181 patent medicines total. Number of medicines for which each ingredient is principal in brackets.

British surgeon Thomas Prosser put it, “many of the advertised medicines are the same in substance and effect, though in different forms” ([Prosser 1777](#): 2). By refusing to disclose his recipe, a producer prevented competitors from copying his medicine’s distinctive form.¹⁸ Thus when Edward Jenner, for example, developed his take on an antimonial patent medicine in the late eighteenth century, surgeon John Hunter advised him to brand it “Jenner’s Tartar Emetic” but “to burn your book”—not to conceal dubious ingredients from consumers but because, otherwise, “you will have all the world making it” ([Paget, 1897](#): 165, 164). Patent medicine secrecy, therefore, was not a device for hiding phony ingredients from consumers. It was a device for preventing imitation by competitors.

3.4. Fraudulent marketing

I evaluate the view that Industrial Revolution English patent medicines were marketed fraudulently—as panaceas, as infallible cures, and using bogus consumer testimonials—by examining the content of patent medicine newspaper advertisements. First, I consider the number of disease categories to which their indication claims belonged. Indication claims, recall, are assigned to disease categories by [Mackintosh \(2018\)](#) based on Buchan’s *Domestic Medicine*. As can be seen in [Table 1](#), most disease categories reflect multiple conditions. “Buchan felt that there was some commonality in either the conditions or their management when he grouped them” ([Mackintosh 2018](#): 58). While nosologies were debated in Industrial Revolution England, multiple conditions that are unrelated from a modern perspective were then viewed as related and treatable in the same way. That view reflected pre-germ-theory English medicine’s understanding of disease and treatment, discussed above. Diseases were understood in terms of symptoms, and treatments in terms of alleviating symptoms. Diseases that shared symptoms thus were often considered related and treatable by the same medicine.

Five hundred forty-two patent medicine advertisements contain indication information. [Fig. 2](#) presents the distribution of the number of disease categories to which their indication claims belonged. A plurality of patent medicine advertisements—38 percent—claimed indications belonging to a single disease category. Seventy-nine percent of patent medicine advertisements claimed indications belonging to three disease categories or fewer, which [Mackintosh \(2018: 58\)](#) also finds. No patent medicine advertisement claimed indications belonging to more than 10 disease categories. And the average patent medicine advertisement claimed indications belonging to just 2.5 disease categories. Buchan’s *Domestic Medicine*, recall, contains more than 30 disease categories. Patent medicines, therefore, were not typically marketed as panaceas. Most newspaper advertisements for patent medicines made limited indication claims.

Next, I evaluate the view that patent medicines were marketed as infallible cures. Five hundred sixty advertisements contain information about infallible-cure claims. *Infallible cure* refers to any advertised claim that the medicine is certain to be effective, including one qualified by language such as “if used as directed.” Just 15 percent of patent medicine advertisements made such claims, which [Mackintosh \(2018: 241–242\)](#) finds as well. Eighty-five percent did not. Patent medicines, therefore, were not typically marketed as infallible cures. Most newspaper advertisements for patent medicines made restrained effectiveness claims.

Finally, I evaluate the view that patent medicines were marketed with phony consumer testimonials. To do so I tabulate (a) the frequency with which patent medicine advertisements used testimonials and (b), conditional on testimonial usage, the frequency with which testimonials were verifiable. *Testimonial* refers to any attestation of a patent medicine’s effectiveness of at least four lines allegedly based on a consumer’s experience. It includes both attestations ostensibly supplied by consumers, for example via a letter of thanks sent to the producer, and attestations supplied by the producer, for example reporting the experience of a consumer with which

¹⁸ This explains why relatively few patent medicines were in fact patented. Applying for letters patent required recipe disclosure. And “Even more than other patents, medicine patents were difficult to protect in the courts without jeopardising their long-term success” ([Mackintosh 2017](#): 27) because prosecuting a patent violation would require publicly airing the details of the medicine’s recipe (see also, [Mackintosh 2016](#)). The same concern explains why among patent medicine producers who sought letters patent, recipe disclosure in their applications could be quite cryptic. As Paris observed of the patent application for James’ Fever Powder, for instance, “the specification of the original medicine is worded with all the ambiguity of an ancient oracle” (1822: 356).

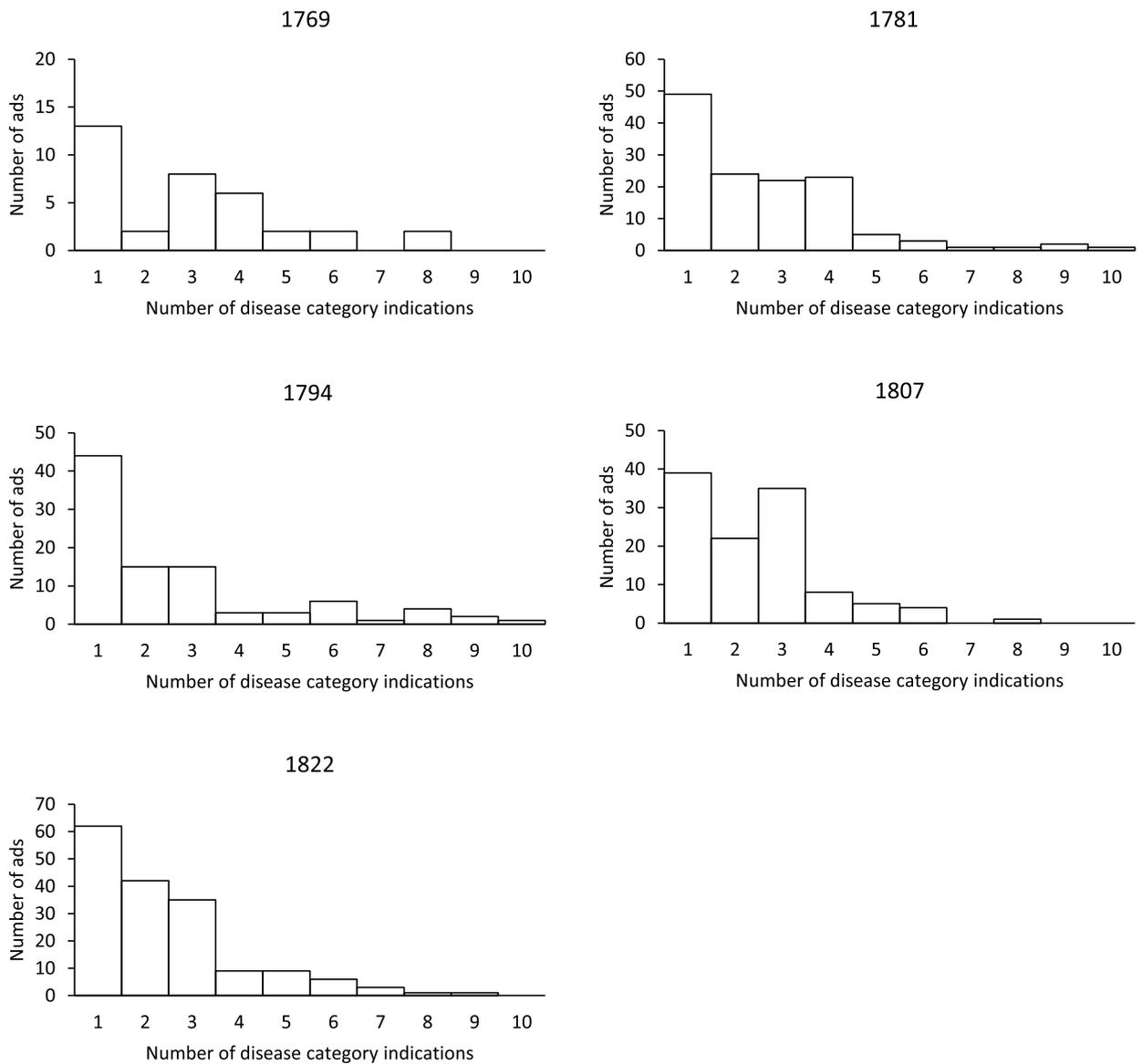


Fig. 2. Distribution of Number of Disease Indications Claimed in Patent Medicine Newspaper Advertisements. Notes: Data from Mackintosh (2018). Disease categories based on Buchan’s (1794) *Domestic Medicine*.

he is ostensibly familiar. *Verifiable* refers to any testimonial that provides information about the alleged attester’s identity sufficient for the doubtful newspaper reader to verify the testimonial. Most often that information is the name, occupation, and/or address of the attester and sometimes a witness. Less often the attester named is someone prominent, such as a clergyman or magistrate. Five hundred sixty ads contain information on testimonial usage.

Just 21 percent of patent medicine advertisements used testimonials. Thus, even if every testimonial were phony, marketing patent medicines with phony testimonials could not have been typical. Further, among patent medicine advertisements that used testimonials, 61 percent used testimonials that were verifiable. Mackintosh (2018: 239) finds similar results. Comparing attester information with entries in period trade directories, it remains possible still today to confirm at least the existence of some attestors who appeared in verifiable patent medicine testimonials (Barker 2009: 392). Even so, if newspaper readers never verified testimonials, patent medicine producers could use verifiable but phony testimonials without consequence. In that case, however, we would expect most patent medicine advertisements to have used testimonials, and as shown above, most of them did not. This suggests that using verifiable but phony testimonials could indeed have consequence for patent medicine producers. When Sarah Adams, for example, encountered a testimonial attributed to her for Dr. Lambert’s Nervous Balsam, she published a letter disputing the attestation in *Leeds Mercury*. The negative publicity compelled Dr. Lambert to try and explain himself publicly (Mackintosh 2018: 239). Patent medicines, therefore, were not typically marketed with phony testimonials. Most patent medicine newspaper advertisements did not use any

testimonials. Among the minority that did use them, the majority used testimonials that were verifiable. And it is unlikely that verifiable testimonials were usually phony. Although the marketing approach taken by newspaper advertisements for patent medicines varied, “The commonest method was” simply “to describe their indications, virtues, prices and availability” (Mackintosh 2018: 236).

Given what constituted medicine in Industrial Revolution England, it is perhaps hard to see how *any* consumers could have attested to having been successfully treated by patent medicines. But recall that to be successfully treated in the late eighteenth and early nineteenth centuries meant something different than it means today. “Drugs were given to patients with...symptoms, and, if the patient improved, it was assumed that the drug was the reason” (Jones and Vegotsky 2016: 44). The substances in Table 2—purgatives, emetics, anodynes, and the like—were not effective treatments in the modern sense. They were, however, capable of alleviating symptoms and thus were effective treatments in the historical sense.¹⁹ “Many nostrums, for example...would dull pain, reduce fever, sooth stomachs, quell diarrhea, produce relaxation” (Porter and Porter 1989: 48). When such effects were forthcoming, patent medicine consumers were naturally grateful. After “the recovery of my second son from a dangerous fever” (Cumberland 1856: 195), Richard Cumberland, for example, penned an ode to James’ Fever Powder. When a grateful consumer expressed her gratitude to the producer with a letter or deposition, the result was a testimonial.

Not unlike modern product testimonials, testimonial praise for patent medicines in Industrial Revolution England could be hyperbolic. “I can truly say that I have experienced more benefits from its use than all the medicines recommended during my illness” (*Leeds Intelligencer* 1820: June 19), gushed one testimonial for Cephalic Snuff. But the praise that grateful consumers lavished on patent medicines in their *private* diaries and correspondence could be equally over-the-top. “James’ Powder is my panacea,” effused Horace Walpole in a letter to Thomas Mann dated 1764. “I have such faith in these powders that I believe I should take them if the house were on fire” (*Index to the Pall Mall Gazette* 1886: 25). With medical hindsight, such praise for an antimonial preparation seems absurd. Given medical knowledge in the late eighteenth century, however, even a member of parliament like Walpole could sincerely extoll the healing powers of a patent medicine. Genuine patent medicine testimonials were therefore possible, and glowing patent medicine testimonials could be genuine.

4. Patent medicine producers believed their medicines were efficacious

Patent medicine consumers were, as Section 3.1 shows, well-informed about medicine relative to medical professionals. Patent medicine suppliers were, as Section 3.2 shows, long-lived and publicly known. Patent medicine ingredients and claims were, as Sections 3.3 and 3.4 show, consistent with professional medicine. A question, however, remains: Did patent medicine producers believe their medicines were efficacious? In Sections 4.1-4.3, I show they did. To do so, I examine evidence from patent medicine producers’ actions in the marketplace.

4.1. Brand-Specific capital investments

A producer who invests in brand-specific capital such as advertising creates a “hostage” whose value he loses if consumers cease purchasing his product. Consumers will cease purchasing a product that disappoints them; hence, a producer will invest heavily in brand-specific capital only if he believes his product will satisfy consumers’ expectations. Fly-by-night operators are unlikely to generate sufficient sales to recoup large brand-specific expenditures (Klein and Leffler 1981).

Consumers in Industrial Revolution England expected patent medicines to treat their illnesses. That, recall, meant alleviating consumers’ symptoms by purging them, sweating them, dulling their pain, and so on, which, also recall, Industrial Revolution English medicinal substances could do. A patent medicine producer who did not believe his medicine would produce such effects thus expected consumers to cease purchasing his medicine. He thereby expected to suffer a capital loss should he invest heavily in brand-specific capital. Only producers who believed their medicines were efficacious would therefore make such investments.

By the same logic, if consumers observed that a patent medicine producer invested heavily in brand-specific capital, they would be credibly informed that he believed his medicine was efficacious: only a producer who expected sufficient sales of his medicine would find the investment profitable, and only a producer who believed his medicine was efficacious would expect sufficient sales. For that reason, consumers would also be willing to pay a premium for such a medicine. A heavily branded medicine would mean a large capital hostage for the producer and thus an assurance of quality for consumers. This section shows that patent medicine producers in Industrial Revolution England made large, publicly observed, brand-specific capital investments in advertising. It therefore furnishes evidence that patent medicine producers believed in their medicines’ efficacy and that consumers were credibly informed of their belief.

Patent medicine producers “went all in for saturation advertising” (Porter 1993: 42). They plastered walls with handbills promoting their products. They distributed pamphlets broadcasting their brands. Most important, they marketed their medicines endlessly in newspapers across the country, by way of which “the nostrum-monger became the emperor of advertising” (Porter 1988: 11). Not just the emperor—the pioneer: “proprietary medicines were among the first standardized, nationally marketed, brand-name products” (Helfand 2002: 34; see also, for example, Barker 2009; Mackintosh 2018). Indeed, they were “Probably the earliest such products” (Styles 2000: 148–149). Already in the late seventeenth century, Daffy’s Elixir, for instance, was a national brand, advertised across England through almanacs before the advent of provincial newspapers.

¹⁹ And, of course, then as now, many sick individuals did in fact recover after taking medicine—not because of the medicine but because of the human body’s remarkable ability to heal itself.

“It was a rare copy of a Georgian paper that did not contain at least half a dozen advertisements for patent medicines” (Porter and Porter 1989: 97). Advertisements for “Dr. James’s Fever Powders, Daffy’s Elixir and Solomon’s Cordial Balm of Gilead,” for example, were featuring “in millions of copies of newspapers each year,” and often “The same or similar advertisements would be placed in each issue” (Helfand 2002: 38). Most newspaper advertising space was devoted to local products or concerns: property sales, notices for lost animals, area shops and events. But among space devoted to products and services that were advertised nationally, “Books and medicines dominated” (Gardner 2016: 51).²⁰ Porter and Porter (1989: 97) estimate that “advertisements for patent medicines” took “up perhaps a quarter of the available advertising space” in the typical Georgian newspaper. “Certainly in the eighteenth century they became one of the largest single categories of advertisement in most newspapers” (Styles 2000: 150).

One reason that “An extraordinary amount of space was always taken up...with the patent medicines” (Cranfield 1962: 221) was their advertisements’ impressive number. The other reason was their advertisements’ impressive length: “advertisements for medicines occupied considerable space, frequently filling more than ten percent of the total column length, and occasionally exceeding twenty percent” (Brown 1975: 352). Newspaper printers charged advertisers by the line. Thus, “Large sums were expended by owners in advertising their medicines” (Stebbins 2018: 17). A single producer “spending several hundred pounds a year on advertising a single medicine across the country would not have been unusual” (Mackintosh 2018: 200). And some patent medicine producers spent far more. Francis Spilsbury, producer of Spilsbury’s Antiscorbutic Drops, claimed that “eight or nine hundred pounds a year are the least sum a medicine can cost to its proprietor, to be advertised...and that, to be well advertised every day, it costs, at least, fifteen hundred pounds every twelve calendar months” (Spilsbury 1776: xxxiii). Samuel Solomon, producer of the popular Cordial Balm of Gilead, avowed the “certain expence of making it known by Advertisements...of many thousand pounds Annually” (Solomon 1810: xiv-xv). “So excessively numerous and lengthy did these advertisements become” (Cranfield 1962: 222).

The “torrent of advertisements would not have been affordable unless significant sales of these medicines were anticipated” (Mackintosh 2018: 30). And producers would not have anticipated significant sales unless they believed their medicines were efficacious. Fly-by-night sales would be unlikely to recoup patent medicine producers’ “huge advertising expenditures” (Helfand 2002: 8). Further, as Section 3.2 shows, patent medicine suppliers were not fly-by-night salesmen. Producers’ large advertising investments thus evidence producers’ belief in their medicines’ efficacy. Those investments, moreover, were publicly observed because the advertisements were conspicuous. Consumers were deluged with them to the extent that patent medicine advertisements “became an all-present feature of Georgian life” (Porter 1993: 42). They were, as one contemporary observed, “so often repeated, and at so great expense” (*Gentleman’s Magazine* 1748: 346). Producers’ large advertising investments thus also credibly informed consumers that producers believed in their medicines’ efficacy.

Advertising was the most important brand-specific investment made by patent medicine producers in Industrial Revolution England. But it was not the only one. Some patent medicine producers, such as Francis Spilsbury and Elizabeth Shackleton, made donations of their products to the poor (Mackintosh 2018: 84, 93). Other producers, such as John Ching and Isaac Swainson, gave away metallic promotional tokens—imitation halfpennies stamped with information about their medicines, which circulated as currency amid the small-coin shortage in late eighteenth-century England. Still other patent medicine producers, such as John Burrows and Robert Turlington, gave away free reading material containing, of course, advertisements for their medicines (Basford 2012: 115). Choosing to incur these nonsalvagable costs would not make sense unless producers believed their medicines were effective, for if producers did not believe their medicines were effective, they could not expect to recoup the costs. Further, because the nonsalvagable costs were publicly observed, they credibly informed consumers of producers’ belief.

Patent medicine producers’ large brand-specific investments explain why patent medicines tended to be expensive even though their widely known principal ingredients tended to be cheap. To recover the expense of heavily branded medicines through continuing consumer purchases, patent medicine producers needed to recover not only the modest expense of ingredients but also the significant expense of brand-specific investments. That required charging a premium, a price exceeding ingredient costs. Thus “the contents of patent medicines generally cost but a tiny fraction of the retail price, with most of the manufacturer’s cost being absorbed by packaging and advertising” (Bynum 1994: 165).²¹ Similarly, the fact that patent medicine producers’ large brand-specific investments were publicly observed explains why consumers were willing to pay a premium for medicines that contained cheap, widely known principal ingredients. Those investments assured consumers that producers expected their medicines to work and thus that the medicines contained ingredients of appropriate kinds, quantities, and grades. In exchange for this assurance of quality, consumers were willing to pay a higher price.

4.2. Policing wholesale distribution

Distribution of patent medicines required wholesaling and retailing, and each distributor through whose hands a medicine passed was in a position to erode it: letting the medicine sit too long and its contents go stale or, more seriously, “stepping on” the medicine, for example pouring half of one bottle’s contents into a second bottle and then topping up both with water to make more product out of less. A patent medicine producer who believed his medicine was efficacious would be keen to prevent distributor erosion. He would consider erosion damaging to his medicine’s effectiveness, hence to his bottom line. Producers who believed in their medicines’ efficacy would therefore have policed their medicines’ distribution.

²⁰ Other products advertised nationally included, for example, insurance, lotteries, and schools.

²¹ This quotation refers to patent medicines near the turn of the twentieth century, but the observation applies equally to patent medicines in the late eighteenth and early nineteenth centuries.

In contrast, a patent medicine producer who did not believe his medicine was efficacious would not be concerned about distributor erosion. He would not consider erosion damaging to his medicine's effectiveness because erosion cannot damage the effectiveness of ineffective medicine. Such a producer may still want to police his medicine's distribution to try and signal its efficacy to consumers. But for signaling to have been informative, producers who believed their medicines were effective would need to have policed distribution with a higher probability than producers who did not, in which case distribution-policing would still furnish evidence that most producers believed their medicines were efficacious.

Moreover, some strategies that patent medicine producers used to police the distribution of their medicines could not have been used for signaling because producers could not have expected consumers to notice the "policing signal." As I show below, the primary strategy that patent medicine producers used to police the wholesale distribution of their medicines was vertical integration. Patent medicine newspaper advertisements contained wholesaler information. That information, however, was provided for the benefit of retailers, not consumers, for whom the "details of the wholesaler had little practical relevance" (Mackintosh 2015: 146) and thus by whom such details would have been ignored. Vertical integration, therefore, would not have been useful for signaling, but it would have been useful for preventing wholesalers from damaging the effectiveness of medicines that producers believed were effective. This section shows that patent medicine producers in Industrial Revolution policed the wholesale distribution of their medicines (Section 4.3 does the same for the retail distribution of their medicines). It thus provides additional evidence that patent medicine producers believed in their medicines' efficacy.

To police the wholesale distribution of their medicines, patent medicine producers followed two strategies. The first was vertical integration, whereby the producer wholesaled his medicine himself. This guaranteed his medicine would not be eroded at the next link in the supply chain. The second wholesaling strategy was monopoly, whereby the producer appointed a monopolist wholesaler for his medicine. Because such a wholesaler did not have to compete with other wholesalers of the producer's medicine, he earned quasi rents on wholesales of the medicine. If the wholesaler eroded the medicine, the producer could fire him, in which case the wholesaler lost the quasi rents he would otherwise earn. Prospect of that loss incentivized the wholesaler to preserve the medicine's quality.²²

Fig. 3 illustrates patent medicine producers' reliance on vertical integration and monopoly to police wholesale distribution. It presents the distribution of the number of wholesalers used by patent medicine producers, identified from 620 newspaper advertisements in Mackintosh's (2018) data that contain wholesaler information. Ninety percent of patent medicine advertisements identify the use of a single wholesaler, who was therefore either the producer exclusively or a monopolist he appointed. Four hundred sixty advertisements additionally contain information that identifies whether the single wholesaler was the producer himself or an appointee. Seventy-six percent of the time the wholesaler was the patent medicine's producer. The most common strategy for policing wholesale distribution was therefore vertical integration, used by producers found in at least 56 percent and up to 72 percent of patent medicine advertisements. The monopoly strategy was used by producers found in at least 18 percent and up to 34 percent of patent medicine advertisements.

In only 10 percent of patent medicine advertisements was the wholesaler not the producer exclusively or a monopolist he appointed. And in these cases, wholesaling was accomplished by combining the two strategies: the producer wholesaled his medicine himself but also appointed one or more distributors, each of whom served as a monopolist wholesaler of the medicine in a particular region. A drawback of both vertical integration and monopoly as strategies for policing wholesale distribution was that they potentially limited the producer's wholesale reach. A single wholesaler, whether the producer exclusively or an appointee, might not be able to serve all retailers who wanted to sell the producer's medicine, especially if they were located in different regions of the country. To accommodate this situation, the producer used more wholesalers, including, typically, himself.

More wholesalers, however, was still not many. As Fig. 3 shows, among the few patent medicine advertisements that identify the use of more than one wholesaler, most identify the use of just two—the producer plus a single appointee. The largest number of wholesalers a producer used was just five, and that includes the producer himself. Using only a small number of wholesalers kept monitoring by the producer manageable and allowed him to ensure quasi rents for each wholesaler he used. With only a few wholesalers, each could be allocated his own region over which he had monopoly wholesaling rights. Thomas Daffy, for example, the late seventeenth-century producer of Daffy's Elixir, "pursued a careful policy, consciously recruiting agents in areas where he was weak and avoiding doubling up agents in towns where he already had a representative. Indeed, he seems to have effectively allowed his agents local and regional monopolies of the Elixir" (Haycock and Wallis 2005: 18). Similarly, John Hill, the late eighteenth-century producer of multiple patent medicines, "'appointed Griffith Wright as agent for the counties of York, Lancaster and Westmoreland'; ...A. Pearson and S. Aris...wholesale and retail agents for sale in Birmingham and...Edward Easton, bookseller, as my sole agent for Salisbury and places adjacent'" (quoted in Mackintosh 2018: 122).

Policing wholesale distribution with the above strategies was costly for patent medicine producers. Vertical integration sacrificed specialization, and monopoly required monitoring by the producer. It is unlikely that patent medicine producers would have policed wholesale distribution with those strategies unless they believed their medicines were effective. The fact that patent medicine producers did so thus suggests that they believed their medicines were effective.

4.3. Policing retail distribution

Like policing wholesale distribution, policing retail distribution would be worthwhile for patent medicine producers if they

²² For a theoretical treatment of this strategy for policing wholesale distribution, see Klein and Murphy (1988).

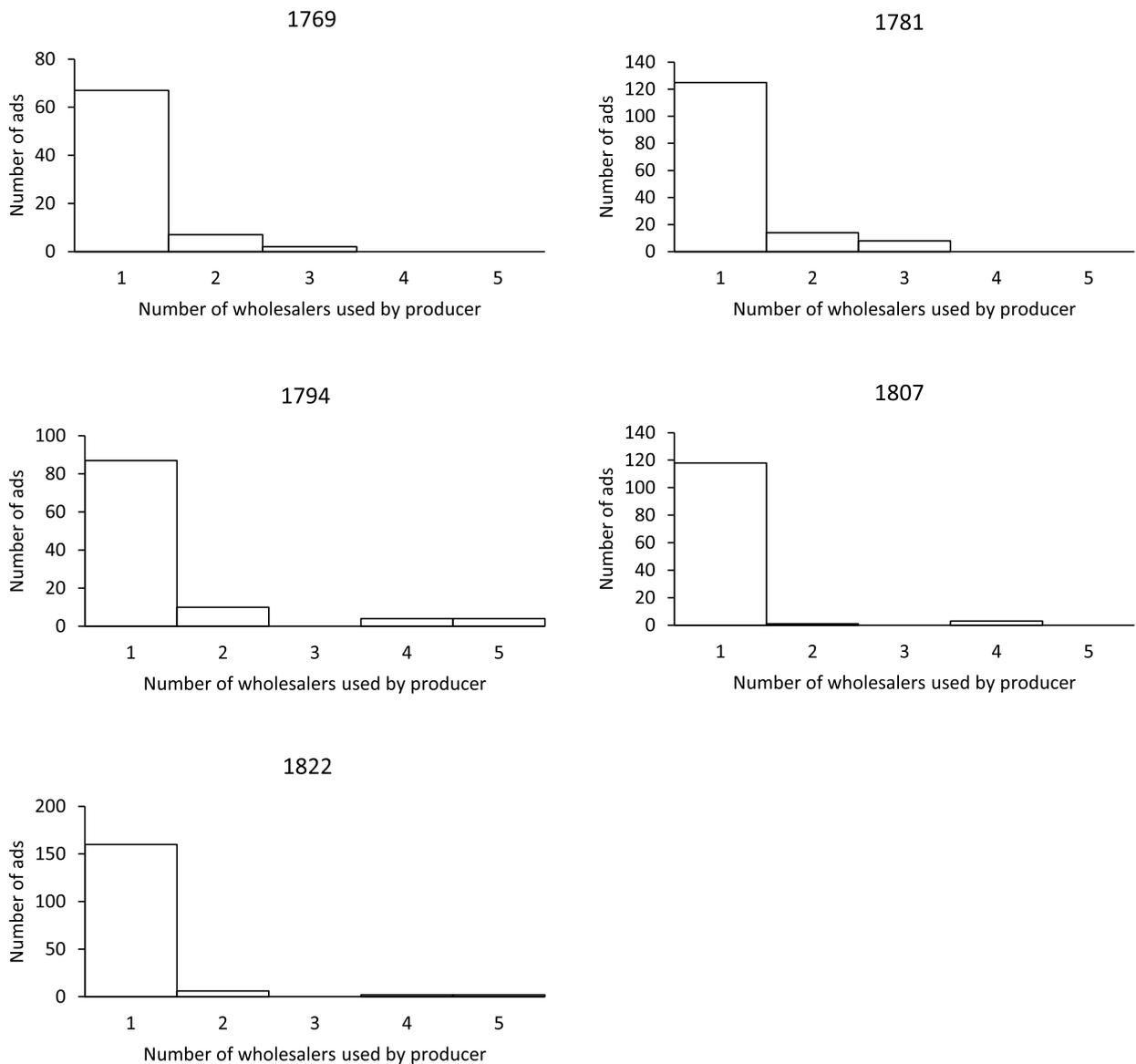


Fig. 3. Distribution of Number of Wholesalers Used by Patent Medicine Producers in Newspaper Advertisements. Notes: Data from Mackintosh (2018). Number of wholesalers used by producer includes the producer himself.

believed their medicines were effective. In contrast, it is unlikely to have been worthwhile for producers if they did not believe their medicines were effective. This section shows that patent medicine producers in Industrial Revolution England policed the retail distribution of their medicines. It therefore provides further evidence that patent medicine producers believed in their medicines' efficacy.

Vertical integration and monopoly were useful strategies for policing the wholesale distribution of patent medicines. They were, however, problematic as strategies for policing retail distribution. Effective wholesale distribution within a region could usually be accomplished by a single wholesaler because one wholesaler could usually serve all the region's retailers. Effective retail distribution, in contrast, often required many retailers because one retailer could normally serve only a fraction of the region's much larger number of consumers.²³ To commit numerous competing retailers of their medicines to the preservation of their medicines' quality, patent medicine producers therefore needed to find alternative policing strategies. They found three: (1) using the newspaper printers who printed advertisements for their medicines as retailers of their medicines, (2) using minimum retail price maintenance, and (3) using

²³ But not always: patent medicine producer Francis Newbury, for example, "seems to have restricted [retail] sales to a single agent in most towns" (Mackintosh 2018: 173).

product packaging that was costly to counterfeit.

“That many venders of patent medicines were booksellers or printers is well known” (Brown 1975: 356). Mackintosh (2015), for example, uses period trade directories to identify the occupations of 535 patent medicine retailers between 1781 and 1822. Approximately 60 percent were print tradesmen, and on average, newspaper printers retailed 80 percent of the patent medicines whose advertisements they printed in their papers. The peculiarity of this situation has been noted by historians (see, for instance, Feather 1985; Loudon 1987; Myers and Harris 1998; Isaac 1998; Barker 2009). Printing has nothing to do with medicine. And printers were far from the most prevalent retail outlets in Industrial Revolution England. Grocers, for example, outnumbered them four to one (Mackintosh 2018: 159). Moreover, “selling proprietary medicines was not merely an occasional side-line for the printers and publishers of newspapers” (Brown 1975: 359). To the contrary, it “was a significant part of the businesses of the majority of newspaper printers” (Mackintosh 2018: 162).

Producers’ heavy reliance on the printers who printed advertisements for their medicines as retailers of their medicines is explained by the incentives of such printers to avoid eroding producers’ medicines. Patent medicine advertisements, recall, tended to be especially numerous and lengthy. They therefore “generated more revenue, than the general run of advertisements” (Mackintosh 2018: 201) for newspaper printers. This meant that if a patent medicine producer ceased advertising in a newspaper, its printer would have to try and find multiple other advertisers to make up the lost revenue. That would be costly for the printer, who thus earned quasi rents on the advertisements he printed for the patent medicine producer. A printer-retailer who jeopardized his relationship with the producer therefore jeopardized his quasi rents, the prospect of which discouraged the printer-retailer from eroding the producer’s medicine.

A limitation of this strategy for policing retail distribution was that it could discourage erosion only by retailers who were also printers. And while printer-retailers were major retailers of patent medicines in Industrial Revolution England, they were not the sole retailers. To discourage non-printer retailers from eroding their medicines (and to further strengthen the incentives of printer-retailers), patent medicine producers followed a second retail-policing strategy: minimum retail price maintenance.²⁴ “Fixed prices were a feature of the patent medicine business” (Jones and Vegotsky 2016: 30). Because retailers competed with one another in selling a producer’s medicine, if the producer did not intervene, retailer competition would drive the retail margin on his medicine to zero. In that case a (non-printer) retailer whom the producer fired for eroding his medicine would incur no penalty, giving the retailer little incentive to preserve the medicine’s quality. Patent medicine producers solved this problem by maintaining the retail price of their medicines above the perfectly competitive (costless-information) price, which created quasi rents on retail sales of their medicines. Now a retailer whom the producer fired lost the quasi rents he would otherwise earn. Prospect of that loss discouraged retailers from eroding the producer’s medicine.

Patent medicine producers accomplished price maintenance by fixing the retail prices of their products nationally and then nationally advertising the retail prices they fixed. This policy had two effects. First, it served “to lay down standard prices to be expected” (Cox 2000: 104) by consumers. That way, encountering a lower price would alert consumers to retailer erosion. Second, the policy prevented price competition between retailers for sales of the producer’s medicine. Short of a retailer taking out his own advertisement for the medicine that promised a lower price, which the producer would be able to see, the retailer could not attract consumers by discounting the medicine. As a result, “patent medicines were sold to the customer at a fixed publicised price,” and patent medicine “retailers competed with each other by providing a good range of fresh products...not by offering the lowest price” (Mackintosh 2018: 173, 174). Patent medicine producers’ minimum retail price maintenance policy is observable in the data. Of the 720 patent medicine advertisements in Mackintosh’s (2018) sample, 629, or 87 percent, advertised the medicine’s retail price. Further, 134 of these advertisements are for patent medicines that were advertised in multiple regions in the same year, and in all but one case the medicine’s advertised price was identical across regions.²⁵

The final strategy that patent medicine producers employed to police retail distribution was to use product packaging that was costly to counterfeit. This strategy was helpful for discouraging retailers from stepping on producers’ medicines because watered-down product required empty containers into which it could be placed for retail sale. The more difficult that producers made it to reproduce their medicines’ distinctive packaging, the more costly they made it for retailers to counterfeit the required packaging, further reducing retailers’ incentive to step on producers’ medicines.

Like brand-specific advertising, “Brand-specific packaging” was “a pioneering feature of the patent medicine industry” (Storm 2018: 47). The “Vendors of prepackaged medicines...were the first individuals to use distinctive bottles and packaging to guarantee the authenticity of their wares” (Jones and Vegotsky 2016: 3). And “Proprietors of medicines invested a great deal of time and effort in the design of the physical form of their product” (Basford 2012: 41). Daffy’s Elixir, for example, was packaged in a globular bottle. Turlington’s Balsam of Life was packaged in a bottle shaped like a violin. Godfrey’s Cordial was packaged in a steeple-shaped bottle. And Holloway’s Ointment was packaged in a delftware pot that boasted a portrait of the goddess Hygeia resting on a throne flanked by a child and serpent.

These “Unique designs offered the consumer a means of instantly distinguishing between brands while offering the proprietor a means of reducing counterfeiting” (Storm 2018: 48).²⁶ Because of such designs, a retailer who sought to make more medicine out of less could not pour eroded product into any old container. To multiply the medicine convincingly, he would need to duplicate its

²⁴ For a theoretical treatment of this strategy for policing retail distribution, see Klein and Murphy (1988).

²⁵ The single exception: in 1807, Sibly’s Solar Tincture was advertised for 6s. in *Leeds Mercury* but for 7.5s in *Salisbury and Winchester Journal*. This appears to have been an aberration: in 1822, Silby’s Solar Tincture was advertised for the same price (6s.) in *Leeds Mercury*, *Leeds Intelligencer*, and *Salisbury and Winchester Journal*.

²⁶ They also explain the attraction of historical medicine bottles to contemporary collectors.

distinctive packaging. Customized patent medicine bottles had to be specially commissioned and were more expensive than generic receptacles. Further, as considered in Section 3.2, customized patent medicine bottles were often embossed with the producer's name and address, "a process that needed to be planned and organised ahead of its manufacture" (Basford 2012: 48–98). Although counterfeiting was actionable under English law, bottle designs as such were not legally protected, and counterfeiters could and did attempt to duplicate them.²⁷ Still, "there was a greater cost to potential counterfeiters in imitating medicines that had embossed branded bottles" (Basford 2012: 49). Hence, a producer's use of such bottles made stepping on his medicine less attractive.²⁸

To further raise the cost of counterfeiting their products, some patent medicine producers also affixed their handwritten signatures to their products' packaging. Forging a producer's signature believably would be difficult, and forging it at all would be a felony. Thus, Velnos' Vegetable Syrup, for example, had "a label affixed to each bottle, with the signature 'Thomas Canham,' in the hand-writing of the Proprietor" (quoted in Basford 2012: 78–79). Mardant's Drops came packaged with instructions hand signed by the producer. And "Rowland's Alsana Extract could not be 'genuine without the signature, in red ink, A. Rowland and Son'" (quoted in Storm 2018: 52). Even the act of placing the required tax-stamp over a patent medicine container's opening—a practice employed by all patent medicine producers—made it more costly for retailers (or others) to attempt stepping on the producer's medicine.²⁹

A producer's hard-to-duplicate packaging could deter counterfeiting only if consumers recognized authentic packaging. To aid such recognition, producers used their newspaper advertisements to publicize the packaging for which consumers should look. "Spilsbury's Anti-Scorbutic Drops, for instance, were advertised as being sold 'in Moulded bottles, with Fluted Corners, and the Words *Frs. Spilsbury, His Antiscorbutic Drops, by the King's Patent, indented on each 5 s. bottle.*'" Wessel's Jesuit's Drops were advertised as being "enclosed in a *black stamp*, with the following engraved thereon, 'JOSEPH WESSEL, St. Paul's Church yard'" (quoted in Barker 2009: 386, 388). And Greenough's Tincture for the Teeth was advertised with this: "Mr. Greenough begs leave hereby to give notice...for the sake of his own reputation...that his genuine Tinctures are in oblong square bottles, on each of which is a label affixed, with these words, Prepared by Tho. Greenough; and for the safety and efficacy of these he will be answerable" (quoted in Basford 2012: 78).

Policing retail distribution with the above strategies was costly for patent medicine producers. Printer-retailers and minimum retail price maintenance required monitoring by the producer, and distinctive packaging that was expensive to counterfeit was also expensive for producers to use. It is unlikely that patent medicine producers would have policed retail distribution with those strategies unless they believed their medicines were effective. The fact that patent medicine producers did so thus suggests that they believed their medicines were effective.

5. Concluding remarks

Historical markets must be judged with care. Often their participants had very different knowledge than contemporary evaluators, and often what their participants knew was wrong. Unless that is accounted for, misjudgment is likely: markets that were normal will appear to have been grotesque failures. The danger of such misjudgment is illustrated by the market for patent medicine in Industrial Revolution England. Conventional wisdom that this market was deceptive perceives it with medical hindsight and thus misapprehends the market as one of asymmetric information. Viewed in the context of Industrial Revolution-era medical knowledge, however, the market was one of symmetric but inaccurate information, which differs from classical markets of symmetric and accurate information only in the verity of what market participants know. In this respect, the market for patent medicine in Industrial Revolution England was a normal one, like the market for towels, which economists generally regard as well-functioning.

In the long run, markets of symmetric but inaccurate information have one of two fates. The first is that they disappear. As knowledge grows and improves, so does the accuracy of buyers' information. In time this leads to vanishing demand for goods that are now understood to be bads. The other fate for such markets is regulation by government. If expert knowledge improves but buyers' knowledge does not, the market becomes one of asymmetric information, creating pressure for state intervention. Even if the market does not become one of asymmetric information, interest groups that stand to gain from market regulation may demand it, leading to the same result.

England's market for patent medicine had the latter fate (Leeson, King, and Fegley 2020). In 1851 the Arsenic Act imposed regulations on the sale of arsenicals, followed in 1868 by the more sweeping Pharmacy Act, which granted medical professions the exclusive right to sell opiates, antimonials, mercurials, and other "scheduled poisons" then common in medicine.³⁰ Not until 1892, however, did the courts bring patent medicines under this regulation's purview definitively. When the Pharmacy Act was promulgated in 1868, the germ theory of disease had not yet become part of English medical knowledge. By 1892 it had become part of that knowledge, but even then, the germ theory's status and meaning remained disputed among English medical professionals. In "the early 1890s...in Britain, there was no consensus that infectious diseases were caused simply by the action of parasitic microorganisms" (Romano 1997: 52). It is therefore hard to argue that the state of English medical knowledge at the time of patent medicine's regulation differed much from its state a century earlier.

What did differ was the organization of England's medical professionals into powerful interest groups. In 1832 England's doctors

²⁷ Trademark protection remained weak and precarious until the Merchandise Marks Act of 1862 and the Trade Marks Registration Act of 1875.

²⁸ Coca-Cola introduced its now-iconic bottle in 1915 to combat packaging imitation. That bottle was patented and thus enjoyed legal protection (Coca-Cola Company, accessed December 10, 2020: <https://www.coca-colacompany.com/news/the-history-of-the-coca-cola-contour-bottle>). By 1915, however, Coca-Cola was mostly marketed as a refreshment rather than as a medicine (Prendergast 2000).

²⁹ And creating new tax-stamps for counterfeit containers required counterfeiting tax-stamps, also a felony.

³⁰ The Pharmacy Act also required medicaments that contained scheduled poisons to be labeled as such.

formed the British Medical Association with the goal “that its members should exercise dominion over all aspects of public health, something which demanded the elimination of other forms of health care provision” (Brown 2007: 240). And in 1841 England’s pharmacists formed the Pharmaceutical Society of Great Britain “to promote the interests of the chemists and druggists” (Anderson 2006: 107), with “a strong desire to restrict trade in the interests of its members” (Berridge and Edwards 1987: 114). English medical professionals, recall, faced intense competition from patent medicines in an unregulated marketplace where patent medicines were close substitutes for their medicaments, where the healthcare literature was a close substitute for their diagnostic services, and where self-treatment was routine. Hence, “the inclusion of patent medicines within poison legislation had been one aim of both medical and pharmaceutical professions since the 1850s” (Berridge and Edwards 1987: 123). The professions achieved that aim in the late nineteenth century. Fifty years later, England’s Pharmacy and Medicines Act banned medicines based on “secret recipes” completely.³¹

My study investigated the market for patent medicine in Industrial Revolution England. Patent medicine, however, was also bought and sold in other countries and eras. Young (1961) and Troesken (2010) study patent medicine in the United States. They focus on the late nineteenth century and characterize the market as deceptive. Perhaps it was, but additional study is required before accepting that conclusion. Whether the colorful examples of dishonest behavior that existing studies adduce were typical of patent medicine producers in late nineteenth-century America or instead reflect a minority of bad actors is an open question. “Many patent medicines” in late nineteenth-century America, Young acknowledges, “were made by physicians and pharmacists...and other proprietary formulas did not vary significantly from formulas in official volumes” (Young 1961: 168–169). According to one estimate Young cites, “Some ninety percent of American doctors...were prescribing proprietary preparations” (Young 1961: 160). It is enough to make one wonder: Were fraudulent patent medicines in late nineteenth-century America the exception or the rule? After all, every market has fraudsters, but few markets are deceptive on the whole.

Further, as I have tried to emphasize, not everything that looks like fraud to modern eyes was fraudulent in the eyes of historical market participants. To ignore that fact is to run the risk of misjudging historical markets. Troesken (2010), for example, sees deceit in the fact that some late nineteenth-century American patent medicines were composed mostly of alcohol. Yet he neglects the temperance movement in late nineteenth-century America, which led to state and local prohibitions of alcoholic beverages that often did not apply to medicines. Even if one assumes that alcohol was not considered medicinal in late nineteenth-century America, that raises the question of whether the sale of alcoholic patent “medicines” may have been not a con but rather a conceit between producers and buyers in search of a drink. More importantly, it is wrong to assume that because alcohol or other ingredients in late nineteenth-century patent medicines are not considered medicinal today that they were not considered medicinal in the late nineteenth century. Often the assumption will be false, as it appears to be for alcohol: “by the late 1860s alcohol was widely regarded as an effective antipyretic” (Estes 1988: 7)

My point is not that the market for patent medicine in late nineteenth-century America (or anywhere else at any other time) was normal, as I have argued was true of the market for patent medicine in Industrial Revolution England. I have not studied the former market, so I cannot say. My point is that judging the market accurately requires considering the market *as a whole*, not just its comment, and considering the market in *its* historical context, not ours.

Which brings me to the latter. It is tempting to view the market for dietary supplements in twenty-first century America as a modern analog to the market for patent medicine in Industrial Revolution England. It is also mistaken. Besides the fact that the former market is regulated—product ingredients, labeling, claims, and advertising—while the latter market was not, there is a more crucial difference.³² Insofar as modern Americans take supplements that contain, say, mega-doses of vitamin C in the belief that it will treat their colds (even though supplement producers are legally prohibited from claiming as much), their belief is not supported by modern medical science, which does not attribute cold-treating powers to mega-doses of vitamin C. In contrast, when Industrial Revolution Englishmen took patent medicines that contained, say, antimony in the belief that it would treat their fevers, their belief was supported by Industrial Revolution-era medical science, which attributed fever-treating powers to antimony.

The present-day equivalent of Industrial Revolution English patent medicine is not a product or service that we, in the present-day, could identify. It is a product or service that medical science now endorses but will, in the future, regret. We cannot identify that product or service because our capacity to judge what future medical science will regard as false is constrained by what current medical science regards as true. If we knew it were wrong, we would not think it right. Which medical practices constitute our “patent medicine” is therefore uncertain. Yet unless current medical science has achieved the stage of Ultimate Truth, we can be certain that to some degree we are amid a “patent medicine” episode of our own.

Declarations of interest

None.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.euroecorev.2022.104117](https://doi.org/10.1016/j.euroecorev.2022.104117).

³¹ The Pharmacy and Medicines Act of 1941 required the disclosure of all ingredients on medicine labels and made it illegal to advertise medicines as treatments for several diseases.

³² In the United States, dietary supplements are regulated by the Food and Drug Administration (ingredients, labeling, claims) and the Federal Trade Commission (advertising), albeit far less stringently than drugs, which require premarket approval.

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