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**Wonder Shows: Science, Religion and Magic
on the American Stage, 1845-2001**

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**Wonder Shows: Science, Religion and Magic
on the American Stage, 1845-2001**

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PREFACE

One of my more powerful childhood memories concerns a visit to Chicago's Museum of Science and Industry. Besides being impressed by the neo-classical building next to the lake and all the stone ladies holding up the roof on their heads, I recall a science demonstration that a young acne-afflicted woman in a smock offered in a small anteroom, possibly the gift shop. Among other tricks she placed a rose in a vial of liquid nitrogen, removed it, and struck it with a hammer—it then shattered as if made of stone or plaster. This unexpected and beautiful event evoked a sense of wonder in me. I was fascinated, both by the completely unexpected shattering of the rose, and that a young woman could control such strange cosmic forces.

Her explanation of this and her many other demonstrations remain vague; but I now realize this was the first performance I had witnessed of what in this work I am calling a "wonder show." It did not make a scientist of me, as may have been the intention, but it did instill a proper sense of awe and appreciation for the possibilities technology and showmanship could provide. That homely demonstration, combining science and magic, fits the description of a wonder

show that this work relies on. This combination of science and magic can evoke pleasure in the spectator, whose day-to-day perceptions are shattered and opened to new realms of possibility. As this work will show, such demonstrations can be powerful sales tools. Over the years, for example, similar choreographies have been used to promote the varied fortunes of General Motors and of fundamentalist Christianity. The well-scripted wonder show, then, is a strong concoction.

Another childhood memory of mine also relates to this performance genre. At a junior high school gym assembly in the 1960s, a visiting lecturer projected on a tilted screen time-lapse films of flowers opening. The footage was black and white, grainy, shot from not particularly dramatic angles, yet enthralling. The repetition only increased our interest as viewers. The speaker told us that a fellow townsman, an engineer, had pioneered this technique decades earlier. I still recall my near-deification of the mysterious inventor, once in our midst, who had thought up such a great technique. The films, though homely productions, offered a glimpse of a non-human perspective and the clear moral that all life was a miracle. Perhaps their tracing of organic growth served as an antidote to the rose I had seen years earlier shattered at the Science and Industry Museum. These linked memories also suggest that, as a child, I was not particularly provoked to wonder by gazing at an actual rose, but only one that came filtered through technology.

My intention in reciting these childhood memories is to establish the purpose of the wonder show—to cause the spectator to see the world through new

eyes, perhaps like those of a child. Such an aesthetic experience has a religious dimension. Some authors have argued that the capacity for wonder and the desire to wonder, although universal, are particularly well-developed in America. Alexis de Tocqueville, the chronicler of the American scene during the Jacksonian era, commented, “The American lives in a land of wonders ...everything around him is in constant movement, and every movement seems an advance.”¹ A century later, another foreign observer, British literary critic Tony Tanner, also noting the American appetite for innovation, entitled his look at American fiction The Reign of Wonder (1965).

Yet it is not my childhood memories of roses shattering and time-lapse views of flowers opening that solely have propelled this project. A more recent stimulus came when I heard a hypnotist interviewed on National Public Radio in 1999. He spoke of the psychotherapy he practiced with hypnosis and promoted the value of this technique, yet he seemed vaguely defensive. This interview suggested the uneasy terrain that hypnosis still inhabits. As a public, we view hypnosis as a blend of science, art, and the otherworldly, our conception filtered through the pulp imagination that once led, for example, to the beautifully-drawn panels of "Mandrake the Magician" cartoons, in which the dapper magician defeated thugs by creating paralyzing hypnotic illusions.

¹ Alexis de Tocqueville, Democracy in America. (New York: Doubleday, 1969), 404.

The hypnotized subject imitating a canary and the rose shattered from a hammer blow suggest two ends of the wonder show continuum. One terminus involves the wonders of the human mind, the other wonders of engineering and invention. Often these opposed celebrations are offered in compensatory balance. If displays of marvelous technology can threaten our sense of human uniqueness and destiny, displays of amazing mental powers can once again reassure us of our very uniqueness. Progress, again, can march on, unimpeded by debate as to what it precisely means or entails.

The title of this work, Wonder Shows: Science, Religion, and Magic on the American Stage, 1845-2001, requires only slight explanation. I use the words "science" and "technology" interchangeably, as I am most interested in public attitudes towards that amalgam of forces—compounded of the labor of scientists, inventors, engineers, business people, consumers, intellectuals, policy-makers, and laborers—that have instigated "modernization," and so changed lives, social relations, landscapes, and modes of thought. Likewise, I use the words "religion" and "magic" interchangeably.² These I have categorized primarily as human enterprises antithetical to a mechanistic or materialistic worldview and its assumptions. The sort of "magic" that public performances of Spiritualism, telepathy, and hypnosis conjured, I will argue, had a religious component. Such

² Jon Butler argued that interest in the occult and supernatural has long been a component of the American religious experience in, Awash in a Sea of Faith: Christianizing the American People (Cambridge: Harvard U Press, 1990).

performances offered new marvels to an age stripped of the older order of miracles and bolstered arguments for the realities of a spiritual realm.

The year 1845 is this work's starting point because that is the date of the earliest documents I have inspected for this project: the letters that the traveling electrical demonstrator Charles Came sent home to his wife while performing in rural New York. 2001 is the closing date since it has a millennial ring and was the year I concluded my research after viewing the performances of several inventors of utopian devices, so ending my eavesdropping on the ongoing dialogue about technology, progress, and the human need for wonders that this project explores.

It could be argued that on at least one level all historical works are veiled autobiographies. More than once, while viewing or envisioning apparatus that wonder showmen have used in the past, I imagined taking to the lecture circuit with similar antiquated wonder-making machinery. This may be a genetic flaw. My grandfather, long deceased, came of age in Chicago in the roaring twenties; he was a lawyer who had a passion for show business that led him to become a stage magician and hypnotist and serve terms as president of the Society of American Magicians and the International Brotherhood of Magicians. These personal associations transformed the process of researching and writing the second section of this book, which details the acts of such "mystic vaudevillians," into what seemed family biography.

My larger goal has been to trace out a new performance genre, while exploring the cultural fissures between science and religion, which might be termed "the Scopes problem," and between technology and our sense of human uniqueness, which could be termed "the John Henry syndrome." Often, the wonder showmen conjured up a middle ground where these opposing forces appeared to blend. On stage, the scientific showman could emphasize both the glories of the human intellect and its products, and suggest that a religious worldview, particularly the belief in the human soul, could be supported by the latest research of psychologists, parapsychologists or other men of science. These shows, then, served as a haven where contradictions were cancelled, opposites collapsed, and, as in a comedy, everyone could live happily ever after.

Like a Las Vegas stage illusion act, a work of scholarship involves a great deal of collaborative effort. The scholarly laborer should take the label of "author" advisedly, as the final product required much in the way of off-stage arrangements and on-stage promptings.

My thanks go to Jeffrey Meikle, my dissertation advisor in the American Studies Department at the University of Texas at Austin, who made extensive notes on the manuscript as it developed; thanks also to Bruce J. Hunt who brought me up to date on the history of science, and to my other dissertation committee

members, Linda D. Henderson, Janet M. Davis, and Robert H. Abzug. At academic conferences, commentators Daniel McInerney, Jodi Dean, and Nancy Tomes offered useful criticisms of early versions of chapters. Anonymous readers at the Journal of Medical Humanities improved the hypnosis chapter considerably, and their extensive and helpful suggestions bolstered my opinion of the academic profession.

My thanks to the American Studies Department at the University of Texas, which gave me Robert Crunden Awards for research in 2000 and 2001, as did the American Popular Culture Association and American Culture Association with their Marshall Fishwick Grant in 2001. The librarians I encountered at every archive were extremely helpful. This includes personnel at the Library of Congress, the University of Illinois at Chicago, the Harry Ransom Humanities Research Center at the University of Texas at Austin, the Moody Bible Institute in Chicago, the Magic Castle in Hollywood, and the National Museum of American History in Washington D.C. Special thanks go to Roger Sherman who helped me navigate through the Charles Came Collection at the National Museum of American History and opened his own files on Came to me as well.

Further thanks go out to peers in Austin willing to hear my ravings about mystic vaudeville and to offer suggestions and leads, particularly Bill Bush, Cary Cordova and Ryan McMillan. My brother Steve Nadis also served as a sounding

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Final thanks to my parents, Martin and Lorraine Nadis, who have been very supportive of my return to academia. The rest of my thanks, drawn from a deeper well, go to Kate, my partner, who even came with me from New York to the hot plains of Texas, and to Rose and Saul, who are, naturally, the best children in the world.

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PART ONE: ELECTRIC WONDERS

Introduction: Beyond the Z-Ray

"But, I don't understand," said Dorothy, in bewilderment. "How was it that you appeared to me as a great Head?"

"That was one of my tricks," answered Oz. "Step this way, please, and I will tell you all about it."³

L. Frank Baum published The Wonderful Wizard of Oz in 1900 at a time when the American public was confident that science and technology were evoking a modern world of wonders. It was also a good time for shady characters, like Oz, the circus-promoter and balloonist, who could float above the boundaries of science, medicine, and showmanship. This dissertation is a study of scientists as showmen, and of showmen who mimicked scientists while promoting the wonders of technology and of the human soul. This study looks at how the tension between religion and science has played out for the last century and a half in theaters and dime museums, at world's fairs, and in other public forums.

In this work, I am isolating the "wonder show" as a thematically distinct performance genre extracted from a mixture of performance modes. Hypnotists, mind readers, evangelists, and inventors all have offered presentations that share the common area in which science blends with magic. Within this region of overlap, show people have proposed that technology and science both partake of wonders, and that the magic feats they have performed on stage have a scientific basis; such performances I will call the "wonder show."⁴

In the mid-nineteenth century when the wonder show emerged, both dystopian and utopian notions of technology circulated in American culture. People believed that technology could either bring humanity to a more god-like state or lead humanity to a godless and infernal future. The wonder show's message directly addressed the cultural tensions that accompanied modernization.⁵ The cautionary wonder show could suggest the dangers of technology and modernization, but more often its utopian twin reassured audiences that technology was safe and had positive moral ramifications. The wonder showman ran shows that glorified science and technology and glorified the human mind or spirit. Such shows insisted that advances in technology would be closely paralleled by wondrous advances in the human sensory apparatus and

³ L. Frank Baum, *The Wonderful Wizard of Oz* (New York: Penguin Books, 1984 (1900)), 156.

⁴ Numerous magicians toured with what they called shows of wonders, one example is turn-of-the-century performer Howard Thurston's "Wonder Show of the Universe."

⁵ For the sake of this study, I will not trace the notion of "modernization" or the "modern" to early Enlightenment thinking, but instead apply it to the height of the industrial revolution, particularly with the coming of electrification to western societies in the late nineteenth century.

soul. Religion and the individual need not be left behind by progress in science and technology.

The wonder show performer is a distinct type, with kinship to such other types as the scientist, the visionary, and the humbug. These showmen may have been genuine scientists, technology enthusiasts, lay healers, inventors, salesmen, or out and out frauds. Some examples include stage magicians who referred to themselves as "natural philosophers" in the early nineteenth century and so offered a night's worth of "experiments" rather than tricks; nineteenth and twentieth century mesmerists and stage hypnotists who worked healing miracles in music halls; inventors like Nikola Tesla, who presented himself as a wonder worker and would allow electricity at high frequencies to shoot through his body and fingertips during lectures in the 1890s; corporate representatives of the 1930s who presented magical technology like stroboscopes and "electric eyes" to a fascinated public, and evangelists of the Cold War era who offered technological displays as parables to reinforce the truths of Christian belief.

This wide-ranging group includes sincere science popularizers along with mystics and charlatans. The object of this study is not to make moral distinctions between genuine and fraudulent representatives of "truth"—it will look, however, at how such countering claims to "truth" interacted. Performers, for example, continue to delight in "unmasking" one another as frauds, just as Dorothy and

company unmasked Oz as a humbug in Baum's tale.⁶ Such fascination with fraudulence and its unmasking was common to nineteenth-century culture. P.T. Barnum scholars argue that the nineteenth-century public enjoyed being fooled by Barnum because his grand promotions of such specimens as the Fiji Mermaid and the "What Is It?" educated people in the art of commercial hype that was slowly infiltrating their lives.⁷ Oz was setting up shop and offering illusions to manipulate citizens turned consumers. As such, Barnum's good-natured confidence games helped unmask the larger confidence game then in progress. This study examines the tension between those who claimed authenticity and those they derided as fraudulent. But it will not view that dynamic through a moral lens. Rather than exposing the wonder showman as a "quack," that is, as the villain of many accounts of pseudo-science, I will instead explore how this figure bridged the world of science and magic, of the rational and irrational.

The most common strategy of mainstream books that have dealt with pseudo-science is to educate the reader about the differences between true science and delusional thinking. Such writers see the public as a sort of beleaguered maiden, threatened by rising tides of ignorance and superstition, unable to

⁶ James Randi, a.k.a. the "Amazing Randi," is a contemporary stage magician who has made a career of policing the boundaries of science by condemning fraudulent psychic performers. He follows in the tradition of nineteenth-century magicians who "unmasked" Spiritualists, as well as the footsteps of this performance mode's most-famous exemplar, Harry Houdini, who found a second career in anti-Spiritualism in the 1920s.

⁷ For a Barnum study that thoroughly addresses this theme, see James W. Cook, The Arts of Deception (Cambridge: Harvard University Press, 2001). One implication of Cook's study is that

recognize science as her knight in shining armor.⁸ Such a melodramatic presentation avoids the nuances of this relationship and, often, its historical and sociological context. This dissertation, instead, will explore the complex cultural tensions that the performances of "quacks" addressed and which helped them to flourish.⁹

The wonder show has filled a public need. Performances that link technology and invisible powers have dramatized the public's conflicted feelings about modernity—feelings which have alternated between awe at unveiled technological possibilities and revulsion at the onslaught of an automated and regimented environment. To such audiences, showmen offered up visions of science's splendor, or, conversely, nostalgia for lost enchantments. Wonder show performers also often revealed fantasies of mastery and of enslavement to newly-awakened forces. The sight of a virile magician commanding a woman to float, or a gentlemanly hypnotist coaxing bizarre or bestial behaviors from respectable

Barnum might be thought of as a predecessor of Bertolt Brecht, the purpose of whose "alienation effect" was to remind audiences that theater was artificial, but that the labor behind it was not.

⁸ Critiques of pseudo-science and quackery, common in the nineteenth century, form a historical genre still thriving today. One of the founding texts of more recent critiques is Martin Gardner, Fads and Fallacies in the Name of Science (New York: Dover Publications, Inc., 1957); more contemporary entries include Robert L. Park, Voodoo Science (Oxford: Oxford University Press, 2000); Carl Sagan, Demon Haunted World (New York: Random House, 1995); and Michael Shermer's Why People Believe in Weird Things: Pseudoscience, Superstition, and Other Confusions of Our Time. (New York: W.H. Freeman, 1997).

⁹ Sociologists have analyzed how the scientific orthodoxy and its friends police the boundaries of science and protect it from contestation. One useful anthology, edited by Roy Wallis, is On the Margins of Science: The Social Construction of Rejected Knowledge (Staffordshire: University of Keele, 1979). Recent historians also have analyzed the erosion of public knowledge of science in terms of the rise of mass media. According to this analysis, America's once education-thirsty public has instead developed a taste for sound-bites and scientific fun facts, a diet which creates a

subjects—convincing a town council member, say, to proudly cluck like a chicken—might have both aroused and eased middle-class males' fears of dwindling freedoms as they entered standardized work places and white-collar jobs. Harry Houdini's remarkable escapes from handcuffs, shackles, chains, strait-jackets and sealed trunks thrown in rivers made him into a symbol of the liberated individual able to defeat "the system."

The wonder show emerged at the same time that utopian and dystopian visions of technology were vying for preeminence, and when science had begun to supplant religion as the ultimate authority on the nature of things. The post-Civil War era in America brought both the Barnumization of American public life and a vigilant dedication to realism. Instead of the antebellum preoccupation with human perfectibility and belief in the soon-approaching millennium, a new cynicism about the old truths arrived, along with marketing strategies and a mania for documentation, data collection, statistical analysis, and other scientific methods for improving society. Engineers and inventors became culture heroes, featured in newspapers and novels as the embodiment of progress.¹⁰ The praise songs that romantic authors once offered up when facing Nature's sublimity were now offered when facing the magnificent products of technology and the

new version of "superstition." This was most forcefully argued in John C. Burnham's How Superstition Won and Science Lost (New Brunswick: Rutgers University Press, 1987).

¹⁰ For historical explorations of this penchant for realism and science in nineteenth century America, see David Shi's, Facing Facts: Realism in American thought and Culture (New York: Oxford University Press, 1994), and Cecilia Tichi's Shifting Gears (Chapel Hill: University of North Carolina Press, 1987).

engineering arts—whether locomotives, giant dynamos, grain elevators, pyramids built of tins of potted ham, or the Brooklyn Bridge.

Fervor for science and technology emerged on a mass scale because their appeal was as much emotional as rational. The public, uninitiated into the technical languages, sensed these forces formulated a new mystical realm. Progressive reformers seized on technology and scientific methods to mend social ills, while promoters and capitalists encouraged public worship of technology with awesome spectacles and amusing displays, evoking what historian Leo Marx termed the "technological sublime"—that is, the modern penchant for viewing the technological object with the awe once reserved for dazzling displays of nature's majesty and power.¹¹

Utopian novels based on the coming technological paradise had a vogue and encouraged progressive beliefs. Edward Bellamy's Looking Backward, written in 1888, foresaw a future paradise in the year 2000, when all corporations had merged to form a benign governing body. In Bellamy's year 2000, competitive capitalism and its wastefulness had vanished, and all of society's resources were directed towards the general good. A technical elite kept the system flawless and efficient. Streets were clean, crime and advertising had disappeared, credit cards were used instead of money, pneumatic tubes efficiently

¹¹ See, for example, Leo Marx, The Machine in the Garden (New York: Oxford University Press, 2000[1964]) and David E. Nye's more recent American Technological Sublime (Cambridge: M.I.T. Press, 1994).

distributed goods from warehouses to homes, and amusements were serene—the citizens of 2000 had a special taste for listening to nightly concerts via telephone broadcast. Bellamy's book was wildly popular. Dozens of utopian novels patterned after Looking Backward were published. Other utopians drew up plans for colonies and cities and a few led pioneers off to remake the world.

If promoters spoke of technological and material progress as if it tallied with divine will, many critics were less certain of the validity of such progress. Walt Whitman took up the concerns of the romantic movement of the early nineteenth century when he sounded an alarm in Democratic Vistas (1871) in which he fretted over the soulless empire that the Enlightenment, along with technology and business, had ushered in. Escape from the materialistic times into an imaginary pastoral past became a middle-class preoccupation. Readers of Lew Wallace's Ben Hur (1880), patrons of designer William Morris, admirers of the Gothic Revival in architecture, and others took pleasure in imagining medieval times, exotic oriental locales, or golden pasts.¹² Historians have pointed out that the taste for the exotic at the turn of the century neatly accompanied the rise of consumerism and the need to free the public from the strait-jacket of Victorian morals to create free-floating desire.¹³

¹² For an examination of the many "escapes," geographical, philosophical, and otherwise, that the middle and upper classes sought at the century's turn, see T.J. Jackson Lears, No Place of Grace (Chicago: University of Chicago Press, 1994).

¹³ William Leach, Land of Desire (New York: Pantheon Books, 1993).

The year after Bellamy published his popular utopian novel, Mark Twain offered A Connecticut Yankee in King Arthur's Court (1889) as a response both to pastoralists and to proponents of the technological utopia. The novel began with the amusing concept of a Yankee tinkerer, Hank Morgan, whisked back to medieval society, where he gains power when he introduces King Arthur's court to nineteenth-century technologies—and for humor's sake such nineteenth-century preoccupations as baseball and the stock market. To do so, Morgan, aka "The Boss," presents himself as Merlin's superior rival sorcerer. The book ends with an apocalyptic vision of Morgan's youthful followers battling the backers of the Church and Merlin. With Gatling guns, explosives, and electrified fences, Morgan and his backers kill off thousands of knights in armor until there are heaps of bodies around their encampment. Despite this carnage, the technologists of the Dark Ages ultimately fail, and Merlin places the Boss into a deep sleep that will last until the nineteenth century.

Twain's book suggested that technology could function as "magic" just as well in late-nineteenth-century society as it might in an imagined sixth century of the past. Twain also revealed the largely uncivilized textures of both the sixth century and the nineteenth century. In that sense, technology offered little genuine progress. If Twain and other intellectuals were expressing concern over modernity in the late nineteenth century, a much stronger public dissatisfaction with technology and modern life appeared in the wake of World War I with its

seemingly meaningless sacrifice of soldiers' lives, horrific weaponry, and public scandals over profiteering in the armaments industry. Progress was no longer seen as inevitable—nor could it safely be linked simply to technological innovation.

Both progressive intellectuals and reactionaries began to question the materialist creed. Liberal notions that had underpinned the scientific revolution became dubious propositions. Observation and experiment, the free dissemination of information, and the refusal to accept theory on authority had wrought great changes—the rise of the merchant class, the industrial revolution, mass production, mass communication, mass democracy and the business revolution of the late nineteenth century. But along with it came regimentation, class warfare in industry, faster-paced lives, media-saturated landscapes, and what turn-of-the-century neurologist George Beard classified in 1881 as increased "nervousness." From these concerns sprouted the modernist movement in arts and letters. Modernist poets like T.S. Eliot, painters like Picasso, and philosophers like Henri Bergson and William James promoted fascination with the irrational, spontaneous, and the primitive, viewing such methods as instrumental to shaking off the nightmarish aspect of the electrical age.

At the same time, a "lowbrow" modernism had long been underway—with wonder shows included—directing its own rebellion against tradition and rationality. Expressions of this lowbrow modernism included the stage acts of hypnotists, magicians, and mind readers, as well as depictions of mad scientists in

science fiction and film, Rube Goldberg cartoons that revealed the common "boob" enmeshed in surreal mechanisms, and the work of the critic of science Charles Fort, who spent decades collecting clippings from newspapers and scientific journals of oddities such as "black rains," "red rains," falls of slime from the heavens, and showers of toads and small fish to prove that scientists generally didn't have a clue as to how the universe worked.¹⁴ Fort also reveled in documenting the errors of scientists past, as when the French Academy of Sciences claimed that meteors or rocks falling from the heavens were delusions of the provincial mind.

By the 1920s, when Fort was writing, the sterility of the machine became an obsession among populists and intellectuals alike. Expressionist dramas like Eugene O'Neill's The Dynamo or Elmer Rice's The Adding Machine pitted average men against "The Machine" or the regimented society.¹⁵ In this same era, along the same lines as Whitman, one of popular novelist Arthur Conan Doyle's characters preached, "It is this scientific world which is at the bottom of much of our materialism. It has helped us in comfort—if comfort is any use to us. Otherwise it has usually been a curse to us, for it has called itself progress and

¹⁴ See Charles Fort, The Books of Charles Fort (New York: Henry Holt and Company, 1941). See also Louis Kaplan, The Damned Universe of Charles Fort (Brooklyn: Autonomedia, 1993).

¹⁵ An excellent early discussion of this trend can be found in Frederick J. Hoffman, The Twenties: American Writing in the Postwar Decade (New York: Viking Press, 1955 [1949]).

given us a false impression that we are making progress, whereas we are really drifting very steadily backwards."¹⁶

As the above quotation suggests, at the turn of the twentieth century, many people lamented that scientific progress was accompanied by a decrease in spiritual values. Prior to Darwinism, theologians of the early nineteenth century, and intellectuals such as the Transcendentalists, had used each scientific discovery as proof of the glory of Nature, or alternately, of God's creation. Darwin's theory of natural selection, which suggested that creation was the product of random change, ultimately put an end to such "arguments from design."¹⁷ Notions of "theistic evolution" which implied that a greater intelligence guided the evolutionary process had their vogue and temporarily salvaged the relationship between science and religion.¹⁸ In retrospect, however, notions of guided evolution resemble the crutches that appear throughout surrealist artist Salvador Dali's oeuvre propping up melted clocks, cabinet drawers, and human grotesques.

In a universe ruled by chance, humanity's central place was lost.

Sociologist Peter Berger has pointed out that one of the prime functions of a

¹⁶ Arthur Conan Doyle, The Professor Challenger Stories: Land of Mist (London: John Murray, 1958), 340.

¹⁷ Cynthia Eagle Russett, Darwin in America (San Francisco: W.H. Freeman, 1976).

¹⁸ Mainstream religions attempted to accommodate evolution with theories of "Theistic Evolution" that gave God a guiding role in evolution, but by the early twentieth century as the study of genetics and mutation became widely-known, such stop-gaps seemed less tenable. The changing public and scientific conception of evolution and its causes is sketched out quite well in Edward Larson's Summer for the Gods (Cambridge: Harvard University Press, 1997), 16-30.

religion is to erect a "sacred canopy" which provides a network of meaning to the cosmos.¹⁹ The American Revolution, the new constitution's separation of church and state, the accompanying disestablishment of the church, the rise of commercial culture, and swelling immigration all were to tear apart the canopy of American Protestantism. Numerous movements emerged to fill the void,²⁰ including the fervent evangelicalism and perfectionist reform movements of the antebellum, and such new syntheses of the late-nineteenth century as Christian Science and Theosophy. All these movements sought to reclaim humanity's central importance to the universe and to God's plan.

Responses to modernity often did not involve a complete rejection of science but instead efforts to bridge the realms of science and religion. In the aftermath of the John Scopes "Monkey" trial of 1925, which examined the legality of teaching Darwinism and created a schism between the scientific and fundamentalist Christian worldviews, scientists such as American physicist Robert Millikan argued publicly that science need not detract from the values of religion and urged that these enterprises maintain separate realms and functions.²¹ And at the same time that the public puzzled over the place of religion, science fiction writers offered visions of futures which mixed the mystical and

¹⁹ Peter L. Berger, The Sacred Canopy: Elements of a Sociological Theory of Religion (New York: Doubleday, 1990), 25-8.

²⁰ Robert Abzug sketched out the history of antebellum reform against this backdrop of shaken faith in Cosmos Crumbling (New York: Oxford University Press, 1994).

²¹ Millikan wrote prolifically on this subject. One example is his leaflet, A Scientist Confesses His Faith (Chicago: American Institute of Sacred Literature, 1927).

paranormal with technology, religious cults with scientific trappings emerged, psychical researchers attempted to investigate scientifically the reality of the soul and the afterlife, and performers offered dazzling "wonder shows" that combined demonstrations of "science" intermixed with religious or magic content.

The wonder show offered one solution to the crisis of faith generated by the onset of modernity. Like other apologists, the wonder showmen could insist that technology and humanity were progressing hand in hand. Historians Robert Rydell and Roland Marchand have argued that at the turn of the century the emerging elites choreographed the technological sublime at world's fairs to legitimize their power.²² This study will show that the wonder show also belonged to plebian culture in the nineteenth century, and since then has been available to other grassroots organizations such as fundamentalist evangelists and occultists.

This study traces the wonder show formula that *progress = increasing (soul + technology)* through various performance modes and eras. The wonder show in its "pure" form has been rare—most show people tend to emphasize either the technological or the human powers side of the continuum. Yet even when one side of this continuum has been in the background, it casts its shadow on the proceedings. Many stage hypnotists, for example, insisted that their art was valuable because they were able to reach the subject's soul and evoke its healing abilities. Hypnotists also presented their efforts as very much in line with

developments in modern science and psychology. And when corporate engineers of the 1930s presented stroboscope lights, relied on ultraviolet lights to bring out colors in dull rocks, or used liquefied gases to freeze roses and then shattered them with hammers, even if their main goal was to present "science," they were also attempting to thrill their audiences and evoke an aesthetic response akin to that pre-industrial people might reserve for fetish objects.

Anthropologist Victor Turner argued that conventional theater can be viewed as a form of quasi-sacred ritual. The audience in the darkened theater is brought into a "liminoid" state, seeing reality transformed as in a tribal ritual of initiation or healing.²³ The wonder show, which often features faith healing, fits this formula even more closely. The writer Rogan Taylor has argued that all of modern show business finds its prototype in the shaman's sacred ritual.²⁴ Shamans are tribal healers and voyagers into the spirit realm who bring back healing powers and knowledge. Their initiations often involve a death and resurrection experience—similar in outline to the "rebirth" or conversion experience of evangelical Christianity.

Taylor inspected the parallel between show business and shamanic ceremonies. As a prelude to healing, shamans re-dramatized their grisly initiation

²² See Roland Marchand, *Creating the Corporate Soul* (Berkeley: University of California Press, 1998), and Robert Rydell, *All the World's a Fair* (Chicago: University of Chicago Press, 1984).

²³ Victor Turner, *From Ritual to Theater* (New York: Performing Arts Journal Publications, 1982), 20-59.

²⁴ See Rogan Taylor, *The Death and Resurrection Show: From Shaman to Showman* (London: Anthony Blond, 1985).

journeys which typically involved confronting demons that dismembered them; after this symbolic death, spirits came to the aid of the shamans, giving them new life and new bodies. During ceremonies, shamans might perform astounding feats to describe their initiations and convince audiences of their powers. Walking through fire, handling snakes, surviving freezing immersions in waters, escaping bonds, cutting one's limbs and soon after healing, presenting mental powers like telepathy, or offering athletic displays could be featured in such ceremonies. Taking a cue from religious scholar Mircea Eliade, Taylor argued that the shaman's voyage narrative is basic to all drama.²⁵ Harlequin tales of the eighteenth century featured this clown-hero's journeys to the underworld where he was often dismembered and reassembled. Harlequin often also took flights through the heavens. Late-eighteenth-century "Fantasmagorias," produced in Europe and later in America, were stage productions that showed voyages through hell. The European circus might also be regarded in such terms with the ringmaster as shaman and clowns as apprentices—all serving as the audience's guides through the realm of the fantastic.

The wonder show performers included in this study, such as magicians and hypnotists, also display quasi-shamanic powers. Hypnotists, for example, claimed to transport their subjects to an otherworldly realm, anesthetize them to

²⁵ Eliade encouraged scholars to investigate the impact of shamanism on world literature. See Mircea Eliade, Shamanism: Archaic Techniques of Ecstasy (New York: Pantheon Books, 1964), 511.

pain, and evoke powers of healing. An escape artist like Harry Houdini replayed rituals of death and resurrection in his many escapes, as for example when manacled, sealed in a chest, then thrown in a river, and the crowd patiently waited for him to surface. Tesla coil acts in vaudeville suggested that yet another modern deadly force, electricity, could be subjugated by the adept.

To adapt such narratives to the modern age, the wonder shows often has relied on casting in magical terms various scientific and technological breakthroughs. The new invisible powers scientists were uncovering could be regarded as part of the same spectrum as the invisible powers of the ancient world. Public reception of the discovery of the Roentgen-ray or x-ray in the 1890s points to such a linkage.²⁶ The x-ray's ability to reveal formerly unseen realms evoked wonder and thoughts of the spirit realm. Displays of x-ray apparatus could draw crowds both at electrical trade shows and also in at least one cabaret.

To explore one example, a Roentgen-ray apparatus became a big draw at the National Electric Exhibit in New York City in 1896. Of this display, a reporter indicated, "A never-ending line of men and women patiently await their turn to have a 'glimpse of their bones' through a fluoroscope...The Edison exhibit of Roentgen ray apparatus some evenings is presided over by the great inventor [Edison] himself, who affably explains its mysteries to visitors."²⁷

²⁶For an extended look at the x-ray fad of the turn of the century and its impact on modernist art, see Linda Dalrymple Henderson, "X Rays and the Quest for Invisible Reality in the Art of Kupka, Duchamp, and the Cubists." *Art Journal*, Vol. 47, no. 4. Winter, 1988, 323-340.

²⁷ "The National Electrical Exhibit," *American Electrician*, May 1896, 4.

What sort of thrill or insight did the spectator gain when finally placing his or her hand behind the screen? Many articles of the era dedicated to this new discovery included delicate x-ray photographs of the human hand. These plates showed white finger bones and wrist bones surrounded with darkness, and, perhaps, with a small circle of metal around the metacarpus of the wedding ring finger. The spectator of that era would be amazed to see inside himself, and perhaps a little disconcerted to view a portion of his own skeleton, a symbol of mortality. Conceivably, he or she might even reflect on how life and death were intertwined.

Such trade show demonstrations can be compared to a much more theatrical use of x-ray effects which linked the x-ray to the spirit realm. In the 1890s, *The Cabaret du Néant* (or *Tavern of the Dead*) first opened its production in Paris and later in New York City. After entering the Cabaret, the spectator followed a "monk" down a blackened hall to a café with candles on coffin-shaped tables. Spectators ordered refreshments from lugubrious waiters in funeral garb. A lecturer called their attention to paintings of figures which dissolved into paintings of skeletons. While bells tolled and a funeral march played, the monk then led the audience to a second chamber; here, a volunteer was asked to step up on a stage and enter a standing casket. After the volunteer was wrapped in a white shroud the spectators gasped at an apparent "x-ray" effect—actually a simpler

optical effect²⁸—as the man dissolved into a skeleton and then once again returned to plain sight as the skeleton disappeared. In the last chamber, using a similar optical effect, a live spirit appeared to walk around an audience volunteer who mounted the stage to sit at a table.²⁹

The Néant spectacle, which may have pleased the jaded tastes of fin-de-siècle audiences, contrasts sharply with the trade show atmosphere of Edison's homely demonstration of the fluoroscope amid potted palms and plants. Juxtaposed, these two presentations suggest how scientific discoveries had become associated with mystical processes and with entertainment. If Edison's display may have prompted fascination and thoughts about mortality, the Cabaret Néant show explicitly progressed from an apparent exhibition of x-rays to a spiritualistic exhibition. The x-ray, which revealed bones, and the deeper gaze that revealed spirit could appear as a simple progression along a continuum.³⁰ In both settings, the trade show and cabaret, the x-ray reminded people how narrow their sensory range was and how technology could extend and enhance the senses. The

²⁸ The producers achieved this optical effect by placing a plate of clear glass on the stage at a forty-five degree angle in front of the subject. Lights dissolved on the subject while others brightened on a painting of a skeleton on the wings of the stage faced towards the plate glass. The skeleton then shone on the glass before the image of the upright subject. The lighting effects were reversed to return a vision of the subject in the shroud. The effect was arranged so that everyone in the audience would be viewing it at approximately the same angle.

²⁹ Albert Hopkins, Magic: Stage Illusions and Scientific Diversions Including Trick Photography (New York: Munn & Co., Inc, 1911), 55-8.

³⁰ Henderson made this point as well, connecting the x-ray fad of the turn of the century with mysticism and the cubist movement in the art world.

new ray also suggested the power of invisible forces that scientists and inventors were just beginning to tap.

On a more pragmatic level, Roentgen's discovery of x-rays in 1895 was yet another confirmation of the electromagnetic theory of light formulated from James Clerk Maxwell's mathematical studies of the 1860s and 1870s. The expanded theory proposed that visible light filled only one small sector of a wider spectrum of energy vibrating at different frequencies. The theory was first confirmed in 1888 when Heinrich Hertz detected radio waves. Roentgen's discovery in 1895 spurred the search for more "rays," and for ways to use them, as with the "wireless telegraph" and later radio. Likewise, it more firmly enhanced the belief of scientists that an invisible "ether" pervaded all matter and space, providing the medium in which such waves could propagate.

Scientists were then investigating other mysterious rays. Several years after Roentgen's discovery of the x-ray, Henri Becquerel discovered that certain phosphorescent minerals emitted their own characteristic "rays." Soon after, Marie and Pierre Curie isolated several radioactive substances, including the new elements polonium and radium. The Curies spoke of radiation with awe. Pierre Curie, describing the mineral samples he and Marie Curie kept in a shed behind the campus where they worked, remarked, "I well remember the sense of

excitement we felt when we used to enter our little world at night and saw on all sides the luminous products of our work glowing faintly in the darkness."³¹

Wonder showmen, pulp writers and the technically-minded alike had a fixation with new rays. The imaginary Z-ray, for example, was frequently invented and re-invented. An electrical journal from 1896, the year the English-speaking world learned of the Roentgen ray, reported, "an enterprising Bowery dime museum proprietor advertises an exhibition of Z-rays, announcing that they are much more wonderful in their properties than the X-rays, which will be relegated to the rear by the discovery, now for the first time exhibited, etc. The museum proprietor, however, is not alone."³² The writer went on to describe a scientist who had recently announced variants of the x-ray that he chose to call the 'X₁ and X₂' rays. The exasperated writer concluded that, "When the Wurzburg professor [Roentgen], in an excess of modesty and with too great confidence in scientific etiquette, made use...of the letter which is held so mysterious by the non-mathematical, he could not have known how attractive a bait it would prove to the mongers of sensationalism." This writer's point was proved in 1903, when French physicist Prosper Blondot announced to the world his discovery of "N" rays. Articles describing the properties of the mysterious new N-ray generated excitement until an American researcher determined that Blondot, however sincere, was deluded.

³¹ Charles-Albert Reichen, A History of Physics (New York: Hawthorn Books, 1963), 78.

As new rays were posited, writers and researchers theorized that a sixth sense or enhanced senses might take advantage of the widening spectrum of electromagnetic radiation and other vibrations of the ether. Such speculations, which fit the wonder show's formula of enhanced human powers, were common in the late nineteenth century. The insight that the Cabaret Néant embodied—that the x-ray's ability to penetrate through matter suggested the reality of a spirit realm that could be discovered through a similar penetration of the material world—appealed to some scientists. Those who had a psychic-research bent hoped even to annex the spirit realm.

The work of British scientist William Crookes was crucial to the discovery of both the x-ray and the electron. He was also a Spiritualist who believed his religious views had a scientific basis. As early as the 1870s, after the death of his brother on a ship laying telegraph cable, Crookes attended Spiritualist séances and became convinced that the effects were genuine and had a basis that could ultimately be explainable.³³ In the 1890s, both Crookes and another leading British physicist, Oliver Lodge, speculated that "thought transference" or telepathy could be explained via "brain waves" moving through the "ether." One mind, tuned to a similar resonance, might then receive thoughts, much in the manner of the radio prototype that Oliver Lodge had sketched out for others to

³² "Z-Rays." American Electrician, December, 1896, 276.

³³ Richard J. Noakes, "Telegraphy Is an Occult Art," British Journal for the History of Science, vol. 32, no. 115. December, 1999, 421-59.

pursue. The concept of a sixth sense also was proposed and argued in psychic research circles.

Magical rays—especially "Z-rays"—continued to energize pulp literature well into the twentieth century. For example, in 1920, the radio entrepreneur, publisher, and early patron saint of science fiction, Hugo Gernsback, ran the story "The Ultimate Ray," in which a mad scientist asks his captive, "Are we justified in concluding that X-rays are the *ultimate* rays; that is, the rays of highest frequency which it is possible to produce?" Before the scientist's captive could respond, the mad genius announced that this was not so and added, "I, Pax Marriote...have finally discovered the *ultimate ray*, the 'Z' ray, the long sought ray that would decompose matter utterly into energy alone, the disintegrating ray!"³⁴

Gernsback writers continued to exploit the notion of an extended sensory apparatus. In 1923 Clement Fezandié produced "Dr. Hackensaw's Secrets: No. 15: The Secret of the Sixth Sense." In this tale Doc Hackensaw created various machines to enhance the senses. When Hackensaw asked the flapper-like heroine what the most important invention was, she replied "kissing." We soon learn that Hackensaw has even improved on this old invention. As the fingertips are the most sensitive part of the body, the doctor put a special glove—rather like those of today's virtual reality apparatuses—on the heroine's hand to help her sense rays

³⁴ Ray Whitcomb, "The Ultimate Ray," Science and Invention, August, 1920, 449.

well outside the range of our normal senses. Fezandié wrote, "For a moment she stood in expectation, and then a look of wonder and delight came into her eyes, and she felt a sense of ecstasy such as she had never before experienced in her life." The professor explained, "These are radioactive waves that you perceive...you perceive them neither as flavor, scents, sounds or visions, but in an entirely new and hitherto undreamt of manner. What you have been listening to is a radio-active composition of my own composition..."³⁵ For Gernsback's readers, Aldous Huxley's "feelies," apparently, were just around the corner.

Wonder show purveyors, who also relied on the extended-consciousness model that scientists like Crookes and Gernsback's writers explored, offered both miracles and scientific contexts for their acts. Performers claimed that hypnotism, telepathy, and Spiritualism involved channeling or transmitting subtle energies, fluids, or "rays." Proponents were not showmen but "scientists." Hypnotists insisted, with some truth, that they relied on pioneering work in human psychology; stage mentalists, who usually relied on systems of visual or verbal codes, made similar claims on shakier grounds. Spiritualists suggested that séance participants think of the ceremony as an experiment. Stage magicians strengthened their ties to science by becoming champions of "truth" over "superstition" and by loudly denouncing Spiritua lists.

³⁵ Clement Fezandié, "The Secret of the Sixth Sense," Science and Invention. April, 1923, 1169.

Historian Susan Glenn has recently illustrated that the performance strategies of "mimicry" and "exposure," such as the wonder showmen's scientific pose and challenges to one another, were firmly-entrenched throughout variety and vaudeville, as performers such as dancers, singers, and comics copied others or claimed to be better than the original.³⁶ Such mimicry also fulfilled a public taste for exploring the relationship between the authentic and the artificial.³⁷ The 'realism' of the nineteenth century accompanied technologies such as photography, stereo-photography (with its three-dimensional pictures), chromolithography, panoramas, and cinematography that allowed for skillful simulations of the real.

Yet the relationship between performance and science was not purely a parasitical effort on the part of the showmen. Contemporary historians and sociologists of science now link scientific practices—particularly of the seventeenth and eighteenth centuries—with performance. According to this model, scientists have always performed on several “stages”—one stage would be the laboratory with its apparatus and experiments to be performed, another would be the social stage on which discoveries are announced, and, finally, scientists would attempt to make claim to the greater stage of Nature or the universe in which their newly-revealed natural laws were said to operate. The natural

³⁶ Susan Glenn, "Give an Imitation of Me," *American Quarterly*, 50.1 (1998), 47-76.

³⁷This theme pervades Miles Orvell's, *The Real Thing: Imitation and Authenticity in American Culture* (Chapel Hill, North Carolina: University of North Carolina Press, 1989).

philosophers who helped usher in the scientific revolution often thought more in terms of demonstration than of experiment and offered these demonstrations before an upper-class audience. Such public demonstrations displayed the forces at play in the larger cosmic theater and helped audiences appreciate God's handiwork.³⁸

Theater has always had a place in medicine where professors demonstrate surgical techniques, offer anatomy lessons, and exhibit curious specimens to students and peers. Likewise, contemporary sociologists argue that scientific experiments, papers, and press coverage are similar exhibitions, designed for an audience of patrons from whom the scientists attempt to gain status and funding. To do so, the science proposal offered will often insinuate a utopian promise, and ultimately align itself—at least in popular thought—with millennial narratives of religious redemption.³⁹

Although science had long been promoted as an entirely objective discipline, guided not by economics or politics, but by the search for nature's eternal truths, in recent decades sociologists have argued that social forces control

³⁸ Simon Schaffer, "Natural Philosophy and Public Spectacle in the Eighteenth Century," History of Science, 21, 1983, 1-43.

³⁹ To give one recent example, the human genome mapping project of the 1990s involved high spending and great public excitement over the possibility that it would be a miraculous breakthrough—promises that since the mapping has neared completion have diminished in luster. See, Richard Lewontin, "After the Genome, What Then?" New York Review of Books, Vol. 48, no. 12. 19 July, 2001. 36-7.

science's course and shape its encounters with the wider culture.⁴⁰ The encounter of science with that wider culture is one prime focus of this work. Bruno Latour and Donna Haraway recently have argued the importance of a new category of “hybrids”—mixtures of science and culture that are now omnipresent in our civilization. Haraway described such hybrids as “monsters,” perhaps with metaphorical kinship to the famous stitched-together creation of the fictitious Dr. Frankenstein. Such hybrids or “monsters” are the illegitimate offspring of science that emerge where science, technology, medicine, and commerce intersect to revise the social environment, human bodies, landscapes, and the earth’s ecosystem.⁴¹

From this perspective, the wonder show can be seen as an exploration of the world of hybrids. The show itself offers several forms of hybridity, those of science and performance, science and religion, and of humanity and technology. Its stages present scientists who mimic performers and performers who mimic scientists. The wonder showman of the nineteenth and early twentieth centuries who insisted on his intimacy with and mastery over electricity was one such monster; so also was the hypnotic subject who believed himself a farmyard chicken or a cartoon character; the stage mind readers and Spiritualists who

⁴⁰ Although not the first to explore the sociology of science, Thomas Kuhn's The Structure of Scientific Revolutions (London: University of Chicago Press, 1962) was a landmark work in this field that encouraged further studies of the social interactions of scientists with one another and the wider culture.

“demonstrated” monstrously increased sensory abilities; and the mid-twentieth century evangelists who relied on technology to persuade audiences to accept the reality of Christian doctrine. The wonder showman’s stage has offered audiences the threshold to the hybrid; it is a place that allows one to examine and evaluate the marriage of humanity to technology and that marriage’s many offspring—both monstrous and beautiful.

In the exploration of such hybrids, this work will attempt not to critique scientific practices, but will examine how the products of scientific and engineering laboratories, as in scare films about mutant ants, fifty-foot women, or strange pathogens run amok when released into the world. The practice of scientists, however, will be fair game when they choose to leave their laboratories to hawk their products, proselytize about the importance of science to the larger public, or offer expert testimony on the relationship between science and religion.

In order to establish the importance of the wonder show as a historical touchstone, this dissertation follows the genre from 1845 to the present, looking at both obscure performers and well-known historical actors such as P.T. Barnum, Thomas Edison, Nikola Tesla and Harry Houdini. The dissertation’s first chapter

⁴¹ See Bruno Latour, *We Have Never Been Modern* (New York: Harvester Wheatsheaf, 1993), and Donna J. Haraway, *Simians, Cyborgs, and Women* (New York: Routledge, 1991), particularly her chapter "The Cyborg Manifesto."

traces the career of Charles Came, an itinerant electrical healer and wonder showman of the 1850s. Came toured small villages in upstate New York with a wagon loaded with electrical equipment, a self-playing organ, dissolving magic lanterns and slides of scientific and biblical subjects. Came was an apostle of modernity whose shows insisted that the coming technology would heal society of its ills. Chapter Two looks at the cult-like status of electrical inventors as "wizards" at the turn of the twentieth century, and inspects the electrical trade journals to show how members of the craft saw themselves as engaged in battle with nature's demonic powers—a battle that concluded with the domestication of those forces.

The study then moves on to the world of show business, more specifically the acts that performers often termed "mystic vaudeville." Chapter Three presents stage hypnotists and their efforts to defend themselves against progressive critics of their vulgar shows. These critics denounced stage hypnotists yet seized on hypnotism as a possible tool for social control. Chapter Four presents the world of stage magicians and anti-Spiritualist performers. The magicians aligned themselves with science by denouncing the superstitious marvels offered by stage Spiritualists. Chapter Five looks at how stage mentalists evoked "powers of mind"—or soul—to explain their telepathic abilities. Institutionalized science caught up with the wonder show in the 1930s, when Joseph B. Rhine set up the country's first parapsychology laboratory at Duke University and attempted to

prove, through statistical analysis of card choice experiments, that extra-sensory perception was genuine.

Chapter Six describes how, during the Great Depression, showmen representing corporations such as General Electric and General Motors put on science wonder shows, and, soon after, Moody Bible Institute evangelists launched similar shows. If the corporate showmen wished to offer a cosmic justification of the American business model during the depression, the Moody preachers used technological wonders to create parables that pointed to the reality of the Christian cosmos. Big business did not invent the technological wonder show in the 1930s, as some historians have assumed—at best it reinvented it. The wonder show instead seems to be a plastic medium, available to all comers.

A marginalized group took hold of the wonder show premise in the 1950s during the flying saucer craze, which is explored in Chapter Seven. This fad allowed occultists to gain media coverage as they critiqued the military and science establishment and described the rumored saucer "invasion" in terms of a grand wonder show. According to this script, the flying saucers and their inhabitants represented a saner, more spiritually advanced civilization, with advanced technology and mental powers, available to guide erring humanity from its Cold War follies.

The wonder show ideals of the flying saucer fad later became embodied in the New Age movement and its pageantry. The final chapter looks at several

contemporary wonder showmen, situated within the New Age movement or loose alliances of free energy inventors and fundamentalist Christians. This chapter will close by examining the arguments of skeptical debunkers of the New Age mentality. Among these critics are scientists Carl Sagan and Robert L. Park, who both have worried over what they saw as a rising tide of public interest in the irrational. These skeptics also offered their take on the appropriate wonder show message.

A few words may be in order to explain this dissertation's approach. Public debates about the value and limitations of technology and the compatibility of religion and science could easily be traced while ignoring the seedy world of dime museums and the life stories of patent medicine men, travelling hypnotists, and 1950s occultists interested in flying saucers. Yet I would argue that such a focus enriches the historical dialogue. This work places these intellectual concerns not merely in the context of utterances issuing from the desks of clergy and scientists, but also in the concrete medium of public amusements. The popular performances and the larger intellectual dialogues can mutually illuminate one another and remind us that culture in all its richness does not emanate only from the pulpits of high society's churches but also plays out on the lowly stages of the dime museum and the public palaces of vaudeville.

Although this work ranges over a century and a half period, the turn of the twentieth century is at its fulcrum, aligning it with cultural histories that explore the rise of modernity. A few of the broad historical trends this work engages include the rise of consumerism, the emergence of cultural hierarchy, and the efforts of groups to either “resist” hegemonic pressures or seek hybrid middle grounds. Cultural historians have argued that the “illusion-making” apparatus of marketers, similar to that relied on by the fictitious Wizard of Oz, helped create the consumer society. The advertising and public relations industries sought to modernize the public and evoke in them consumer habits based on a free-floating desire.⁴² This conception of an illusion-making apparatus that underpins mass production and consumerism also can make sense of the history of performance, particularly of such figures as P.T. Barnum, stage magicians, and other illusionists.⁴³

⁴² Further exploring this premise, this work is indebted to Orvell, who examined the tension between authenticity and imitation that became a central cultural concern in the nineteenth century with the onset mass production; John Kasson, Amusing the Million (New York: Hill and Wang, 1978), which linked the creation of Coney Island to the rise of mass culture; William Leach, Land of Desire (New York: Pantheon Books, 1993), which presented the turn of the century department store as a crucible in which consumer “desire” was forged, and Roland Marchand, Advertising the American Dream (Berkeley: University of California Press, 1985), which cast the early advertising men as apostles of modernity.

⁴³ Such works as Neil Harris, Humbug: the Art of P.T. Barnum (Boston: Little Brown, 1973) and James Cook, The Arts of Deception have helped frame my approach to the often-fraudulent performances of medicine showmen, hypnotists, and mind readers. My cultural history approach to performance also lead me to consider the issue of hierarchy in the theater, and, as such, is indebted to Lawrence Levine, Highbrow/Lowbrow: the Emergence of Cultural Hierarchy in America (Cambridge: Harvard University Press, 1988).

Many historical studies of popular culture also seek to find areas of “resistance” to emerging power elites.⁴⁴ Scholars of vaudeville at times have employed this approach. Robert C. Allen’s Horrible Prettiness examined how early female burlesque performers contested gender norms, and Alison Kibler’s more recent Rank Ladies developed this thesis to show how both female performers and audience members contested norms of behavior and deportment. In a parallel vein, Robert Bogdan’s Freak Show examined how the “freak” was manufactured, promoted, and received as an exotic "other" that could both challenge and bolster the viewer's sense of identity.⁴⁵

While relying on such models, in general this study is searching less for "resistance" than for attempts to mediate and find consensus. The prime area explored is the divide between science and religion. To take one example, the attempt to straddle this divide can be seen in the sermons of the evangelical preachers of the twentieth century who traveled with technological wonder shows. Such a use of technology suggests that the “technological sublime” need not only fulfill an elitist agenda.

⁴⁴ This approach, with its nuanced presentation of the culture industry, yet often problematic effort to find "resistance" in particular formations, can particularly be seen in the work of two influential scholars: John Fiske, Understanding Popular Culture (Boston: Unwin Hyman, 1989), and George Lipsitz, Time Passages: Collective Memory and American Popular Culture (Minneapolis: University of Minnesota Press, 1990).

⁴⁵ See Robert C. Allen, Horrible Prettiness: Burlesque and American Culture (Chapel Hill: The University of North Carolina Press, 1991), M. Alison Kibler, Rank Ladies: Gender and Cultural Hierarchy in American Vaudeville (Chapel Hill: The University of North Carolina Press, 1999), and Robert Bogdan, Freak Show (Chicago: The University of Chicago Press, 1988).

The primary scholarly contribution this work offers is in the realm of the history of popular science. As such it adds to and attempts to complicate the pioneering scholarship of John C. Burnham, who argued that the rise of consumer society led to a decline in efforts to educate the public. Serious information about science became diluted into the brand of “gee whiz” science offered at twentieth-century world’s fairs. I argue that a parallel vein of “gee whiz” science entertainments have always existed and have cultural significance. Scholarly examinations of world’s fairs, led by Robert Rydell’s many works, also have inspected the use of technological displays. But while Rydell largely explored the “top-down” production of technological fervor, many of this book’s chapters consider marginalized communities and their efforts to seize on the same tools to produce the technological sublime.⁴⁶

In approach, this work shares a rather simple assumption implicit to social history: history should give us an idea of the interests and preoccupations of average people and the spirit of the times in which they have lived. A historian who relies on vanished spectacles like wonder shows as texts for analysis has to assume that they offer a glimpse into the audience’s interests and beliefs. After all, these were forums for which people were paying admission. As with species of organisms, performance genres emerge from a context of Darwinian struggle. The

⁴⁶ See John C. Burnham, How Superstition Won and Science Lost (New Brunswick: Rutgers University Press, 1987), Iwan Morus, Frankenstein’s Children: Electricity, Exhibition, and Experiment in Early-Nineteenth-Century London (Princeton: Princeton University Press, 1998),

simple stage performance strategies that performers such as hypnotists codified over the decades imply that the successful show had to follow the formula to succeed. My effort, in this case, was to determine the cultural significance of the scripted performances promoted in countless "how to hypnotize" pamphlets. Although it is always difficult to prove how vanished audiences "received" such performances, the fact that the genre emerged from the harsh evolutionary environment of the entertainment industry can suggest what people then "were buying."

Yet these notes on method should not relegate the wonder show to the level of a historical curiosity; for the wonder show expresses a paradox: the utopian element inherent in the scientific project almost inevitably must join science to millennial religious longing. Science was born from natural magic and likely never will shake free of its roots. Even while contemporary skeptics patrol the boundaries of science to separate it from pseudo-science, the distinction between science and magic in the popular mind continues to collapse. Those hostile to scientific authority have claimed that the concept of skepticism simply has deepened to include what had once been a consensus vision of the real and the true.⁴⁷ This study suggests the connection between science and "magic" is a

Robert Rydell, All the World's a Fair (Chicago: University of Chicago Press, 1984), and World of Fairs (Chicago: University of Chicago Press, 1993).

⁴⁷ According to one such argument, the postmodern world with knowledge distributed by an all-encompassing mass media counteracted by the democratic underground of internet communications no longer allows for a "liberal consensus" reality but rather a "virtual" reality epistemologically identical to that of a conspiracy theory. This notion is argued in Jodi Dean's

natural outgrowth of the messianic impulses that undergird the realms of science and technology; this connection has been reinforced not only by technology's wonders, but also by the sacrifices technology has exacted in the name of progress.

Finally, as the study's last chapters suggest, the themes this book inspects are not simple curiosities, but at the heart of many of today's public debates about technology and science. Both utopian and dystopian threads continue to run through public responses to new breakthroughs in computer and communications technology, genetic engineering, medical and pharmaceutical technologies, and global commerce. Obsessed scientists, greedy industrialists, corrupt officials, and heroic hacker underdogs are common fixtures in today's popular films. In yet another arena of popular culture, the "wonder show" dream rests firmly at the core of the New Age community's hopes for bridging science and religion. Yet the current fascination with alternative medicine, the latest gadgetry, Eastern mysticism and the otherworldly, and the never-ending dream of the technological "fix," all existed in embryonic form one hundred years ago when the Curies watched the gentle blue light glowing from their mineral samples, and saw it to be good.

Aliens in America (Ithaca: Cornell University Press, 1998). The response of skeptics such as physicist Milton A. Rothman is that "The worst kind of skeptic is the person who believes nothing, and as a result is willing to believe anything." Milton A. Rothman, A Physicist's Guide to Skepticism (Buffalo, New York: Prometheus Books, 1988), 177.

Chapter One: The Electrical Wonder Show

In July of 1853 the Crystal Palace opened on 42nd Street in New York City. Like its slightly-older namesake in London, it was an enormous building of glass, its panes held in a framework of bronze-tinted iron, topped with towers, flags, and a soaring dome. This glass structure housed exhibits of industrial and fine arts that ranged from sculptures of Cupid and a “stag in zinc” to soda-water apparatus, gas meters, mechanical chairs, steam-operated machinery, false limbs, and “a specimen of the banana plant.”⁴⁸ For the opening, much of New York was draped with bunting and flags to greet President Franklin Pierce, who, accompanied by other Mexican War heroes, rode on horseback up Broadway and Fifth Avenue; amid marching troops, he braved a rain shower, then arrived to make his speech at the Crystal Palace. Pierce's talk followed an opening prayer from Reverend Bishop Wainwright who insisted that God's hand could be seen in “all this fertility of invention.”⁴⁹ Pierce emphasized that the Exhibition should be

⁴⁸ These items were listed in William C. Richards, *A Day in the New York Crystal Palace* (New York: G. P. Putnam and Company, 1853).

⁴⁹ “The Crystal Palace—Opening of the Exhibition,” *New York Times*, 15 July, 1853, 1.

seen as a symbol of national pride and unity despite the nation's regional divisions over slavery.

Wainwright and Pierce spoke before an audience that included governors of several states, senators, and members of New York's elite. Outside the palace, in a neighborhood that still had its shanties, soldiers dragged citizens into "grogeries" to drink alcohol, while others consumed ice cream or sodas. A reporter noted that in the turmoil military drums and tubas soon were draped on the backs of stage coaches. Some of the ticketless crowd were lured into a museum that featured a bearded French girl, others into an establishment with a placard indicating that "The President and his suite had been invited, and would probably attend the performance." The newspaper also reported that among the throng were hawkers of patent medicines and a lecturer who exhibited a "novel machine, made 'to test the strength and capacity of the lungs.'"⁵⁰

While business at the Crystal Palace seemingly abounded, with throngs buying season passes or single tickets to walk through its turnstiles, after Pierce's departure from the Astor House another visitor to the city came with no fanfare—an electrical exhibitor named Charles Came who hoped to make his fortune by presenting to the public "The Great Physical Sleeping Phenomenon of the Nineteenth Century." With the help of a lithograph of his Sleeping Man, posed in sleeping, sitting and standing postures, a book about the Sleeping Man's life, and

⁵⁰ Ibid.

a phrenological reading of the sleeper from the firm of Wells and Fowler, Came hoped “to make a strike” and eventually sell his attraction to showman P.T. Barnum. Although the newspapers reported his attraction, Came was eventually to leave New York embittered, having barely met expenses, and loaded down with one thousand unsold copies of his life of the Sleeping Man.

Charles Came was just one of many scientific exhibitors of the nineteenth century who inhabited the borderland of respectable society and educated the public with a mixture of fact and fancy. Before promoting his Sleeping Man, Came had traveled upstate New York, putting on electrical demonstrations while lecturing about astronomy, phrenology, and other topics. Came, clearly, had more genuine dedication to science than the man outside the Crystal Palace with a lung machine that could predict one’s life span when one blew into its tube. Came was a self-taught physician who offered electrical cures of various illnesses and sold remedies such as “Dr. C. Came’s Vegetable Strengthening Syrup” and “Dr. C. Came’s Magnetic Stimulating Drops,” yet he also was a genuine student of science and medicine who believed in the efficacy of his treatments. Indeed, in the many small towns he repeatedly visited, he seemed to gain as much or more esteem from his doctoring as from his showmanship.

Just as the Crystal Palace exhibited the latest products of science and technology in a manner meant to prompt thought and reflection, outside such grand expositions, learned men from academies and itinerants like Came offered

scientific demonstrations and lectures to genteel and working-class audiences. A commentator of the era examining this trend noted, “These are the days of popular lectures and familiar treatises on scientific subjects.”⁵¹ These lectures could range from very capable demonstrations by “natural philosophers” who hesitated to lower themselves to public speaking, to the performances of men like Charles Came who thrived on exciting his audiences about astronomy and electricity before selling them medicine, to the spiels of the hawkers of patent medicines and lung machines on the streets of cities.

Several scholars have argued that the popularization of science, a high-minded affair at the beginning of the nineteenth century, descended into pure spectacle by the early twentieth century when public relations experts and advertising men disseminated “science” as an object of wonder in newspapers, advertisements, and corporate-controlled world’s fairs.⁵² Scientific knowledge became just another commodity to be smoothed down for public consumption. This analysis ignores or denies the importance of the populist science performances of the nineteenth century. The rural and working-class audiences who attended the lectures of performers like Charles Came found not only an educational experience but also a healing spectacle. Such performances were an amalgam not easily pigeon-holed. Came and other electrical exhibitors were

⁵¹“Popularizing Science,” *Nation*, 4, no. 80. 10 January, 1867, 32.

⁵² See Burnham. Also, Roland Marchand, *Creating the Corporate Soul* (Berkeley: University of California Press, 1998), especially Chapter Seven, “The Corporations Go to the Fair: the Visit to the Factory Transformed,” 249-311.

offering popular science as part of a variant of the ever-popular medicine show with its ancient roots. Not just in the twentieth century, but before and after, the public has sought mystic overtones from the science of the day.

This chapter will explore the fissure between “high” presentations of science and the less sophisticated performances of men like Charles Came that emphasized spectacle. These performances suggest the nineteenth-century public’s divided sentiments about the changes technology was bringing, and the public’s fascination with the seemingly otherworldly qualities of electricity. Despite criticism from scientific and social elites, the electrical wonder shows of Came and others thrived, perhaps, because their shows were designed not primarily for education but for therapeutic purposes. Came’s blending of healing with electrical displays helped establish his authority and enhance the possibility for cures—electrical or otherwise. Ultimately, Came was a physician who assured his patients that modernity was safe, healthy, and easy to swallow.

The Advent of the Forty-Foot Flea

When Charles Came arrived in New York during the summer of the Crystal Palace opening, electricity was a well-established field for both research and practical applications. Electro-chemistry contributed to metallurgy and related industries, the electromagnet had industrial applications and telegraphy was

revolutionizing communication. Engineers also were developing the first useful generators and motors. Likewise, Came's interest in the electrical healing of disease was far from a fringe obsession of the day.

As early as the mid-eighteenth century, electricians tried to cure paralytics or revive drowned people through Leyden jar discharges. The connection between electricity and healing became even more pronounced in 1791 after anatomist Luigi Galvani reported that an amputated frog's leg would twitch when exposed to atmospheric electricity. He theorized that he had discovered a new fundamental force, that of "animal electricity." Such energy, he theorized, had been stored up in the frog to be discharged under appropriate conditions. Galvani's theory, which connected electricity to the life force, became popular, providing an early model for the wonder show mentality. If humans, like other animals, utilized electric currents, then their bodies, minds and their health might be enhanced electrically. Many experimenters applied electricity to patients to attempt to restore health. Attempts were made to electrically revive drowned people, though unsuccessfully. Galvani's nephew, Giovanni Aldini, even applied electricity to the corpses of executed convicts and made them briefly breathe, twitch, grimace and kick.

Yet Galvani's experiments had other practical implications. He had reported that the shocks would emanate from the frog when its limb was in contact with two types of metal, such as copper and iron. Taking up Galvani's

research, Alexander Volta finally reasoned that it was the contact between the metals that created the charge—not a build up of charge within the frog’s nervous system. This led to Volta’s development of the first battery, the Voltaic pile, in 1796. His battery, which could supply steady current, consisted of a stack of alternating layers of silver and zinc, with wet cardboard in between. The ensuing electrolytic processes produced a steady current and allowed researchers to explore phenomena not possible with the rapid discharges of the static-charged Leyden jar.⁵³

Voltaic piles and other chemical batteries, somewhat ironically, also aided the further development of electrical healing apparatus. On the institutional level, in the 1830s, Guy’s Hospital in London included an “electrifying room” where both in-patients and out-patients received regular electrical therapy, primarily for nervous disorders.⁵⁴ Itinerant electricians, however, used electrical devices for a myriad of illnesses. One such device was Samuel B. Smith’s “torpedo electromagnetic machine.” Came owned one of Smith’s pamphlets, published in 1849, which explained, in accordance with Galvani’s findings, that “the human body acts on the principle of the galvanic battery....So long therefore, as the integrity

⁵³ For this brief overview of the early history of electricity I have relied on several texts; Percy Dunsheath, A History of Electrical Engineering (London: Faber and Faber, 1962); Charles-Albert Reichen, A History of Physics (New York: Hawthorn Books, 1963); and Edward Tatnall Canby, A History of Electricity (New York: Hawthorn Books, 1963).

⁵⁴ Iwan Morus, Frankenstein’s Children: Electricity, Exhibition, and Experiment in Early Nineteenth-Century London (Princeton: Princeton University Press, 1998), 235-36.

of this circuit is maintained health will be enjoyed.”⁵⁵ Smith claimed that his torpedo could both test for and treat various forms of rheumatism. Came used a similar instrument for electro-therapy that included a battery, induction coil and two electrodes that could be applied to the patient’s body. His posters made wide claims for the sorts of illnesses this therapy could aid. Came’s medical apparatus also included a healing crystal, numerous cures both “botanical and etheric,” and such heroic medicines common to the era as calomel.

Among the few books in Charles Came’s library that survived him were several treatises on phrenology, a medical handbook, and several published lectures on electricity, including two by well-known scientific popularizers of the day: Benjamin Silliman, a Yale science professor, and Dionysius Lardner, an English scientist who edited a multi-volume encyclopedia of science and industry and made an American lecture tour in the 1840s. That Came, who traveled a small-town circuit of his own devising, often with no advance publicity, relied on the publications of Silliman and Lardner, both of whom lectured to large audiences in big cities, illustrates how scientific knowledge was diffused in this age from elite to plebian settings.

That diffusion, often enough, began in England, which then had a better-established scientific culture. In England the popularization of science divided along social class lines. In Frankenstein’s Children (1998), historian Iwan Morus

⁵⁵ Samuel B. Smith, The Scientific Examiner...Electro-Magnetism Radically Applied, 1849, 1.

has argued that the flowering of electricity in nineteenth-century England relied on two cultures, that of the middle-class or elite natural philosophers—theorists following in the tradition of Newton and other gentlemen of science, and that of the mechanics—the artisans who fashioned the scientific (or “philosophical”) apparatus for experimenters and often made new discoveries of their own. Often artisans successfully forged new identities as natural philosophers. Two such “self-made” natural philosophers, electrical experimenters Humphrey Davy and Michael Faraday, saw their goal not primarily in technological development, but in the development of abstract principles—Nature’s Laws. As gentlemen, they pursued knowledge for its own sake, not for the sake of manufacturers and the marketplace. Those who remained among the popular lecturers and mechanics, however, highlighted their instruments and skills, and proudly claimed title to inventions.

Morus’s study followed the theory of recent sociologists of science such as Harry Collins and Bruno Latour who cumulatively argue that science is a cultural practice, subject to group dynamics, material culture, and market forces, and choreographed for rhetorical impact. The scientist, no matter how aloof, must cultivate an audience and “perform” for it in order to gain backing for research programs.⁵⁶

(Pamphlet.) NMAH.

⁵⁶ Morus, xi; 10-12. See also Bruno Latour, "Give Me a Laboratory and I Will Raise the World," in Karina D. Knorr-Cetina, Michael Mulkay, editors, Science Observed: Perspectives on the

If anything, this dynamic was more obvious in the nineteenth century. The author of an 1867 article in the Nation lamented that the scholar of his era, in order to build an observatory or found a museum, had to “appeal... to masses of people; he must fascinate two or three hundred average American legislators...he must exhibit his disinterestedness, enthusiasm, and learning before large audiences; he must be constantly before the public in newspapers, periodicals and popular books. For the noble patron we have substituted the long subscription list.”⁵⁷ Science didn’t “just happen” but was subject to market forces and dependent, in this case, on the judgement of an educated public and lawmakers.

Those who managed to stay above the fray as “disinterested” natural philosophers also had to perform before an appropriate audience. This dynamic is revealed in the career of English scientist Michael Faraday, one of the most important electrical experimenters of the early nineteenth century—the first, for instance, to use a rotating magnet to induce a steady current in a separate circuit. Faraday had to overcome his own artisanal background and prove he was not just “clever” and skillful with his hands to gain acceptance as a natural philosopher. Before joining the Royal Institution as an assistant to Humphrey Davy, he had apprenticed as a bookbinder. He frequented lectures, studied on his own, convinced Davy to hire him, then began to build Davy’s apparatus and later to

Social Study of Science (London: Sage Publications, 1983), 141-170. Drawing from his research on Louis Pasteur, Latour concluded that “science is politics pursued by other means,” 168.

⁵⁷ “Popularizing Science,” 32.

contribute to Davy's research. Eventually Faraday reported his findings independently and was admitted to the Royal Society despite Davy's objections.

At the Royal Institution in the 1830s Faraday began to give Friday Evening Discourses which became quite popular for those members of the elite fortunate enough to secure a ticket. Soon he was able to enchant the crowds with his demonstrations of nature's principles on stage. These discourses increased membership and guaranteed the financially-troubled institution's continued existence. As the Royal Institution's founding premise was to bring science to the aid of agriculture, electricity was not intrinsic to every performance. For example, as part of an 1837 lecture on "Early Arts: The Bow and Arrow," Faraday demonstrated how to use a blowgun and delighted his audience by shooting darts at a target.⁵⁸ Undoubtedly, Faraday, who had studied elocution as part of an active self-improvement campaign, did so while maintaining his dignity.

Less concerned with maintaining such niceties, electrical experimenters who maintained their artisanal status often lectured in the popular galleries of practical science that had a vogue in England from the 1830s to the mid-1840s. One such popular lecturer was William Sturgeon, a leading electrical experimenter who proudly clung to his artisanal background. In 1825, Sturgeon invented the first electromagnet. He was also a master mechanic and builder of electrical apparatus, and editor of the journal Annals of Electricity. Sturgeon's

⁵⁸ Morus, 29.

position was, of necessity, populist. He did not lecture at the Royal Institution and never gained admission to the Royal Society. Instead he built equipment and lectured at the popular galleries.

Galleries such as the Adelaide Gallery and the Polytechnic Institution in London where Sturgeon and other popularizers lectured were similar to today's science and industry museums: the galleries offered spectacles and examples of industrial arts and working machinery. Attractions might include a large orrery that replicated the movements of the planets, an electric eel, an "oxy-hydrogen" projecting microscope of three million power that could project an image of a flea forty feet wide, and a working diving bell that took volunteers underwater. At such galleries, lecturers such as Sturgeon demonstrated the decomposition of water via electric current and other electrical effects. Along with education and uplift, these galleries also blended in entertainments more common to Peale's Museum in Philadelphia and Barnum's American Museum in New York—such as dioramas, comic impersonations, and performers such as Tom Thumb.⁵⁹ Needless to say, these galleries were popular with middle-class and working-class audiences, and did not limit tickets to subscribers.

Early nineteenth-century America lacked the galleries of mechanical science of England. One exception was Peale's Museum in Philadelphia, less a precursor of contemporary science museums than of contemporary natural history

⁵⁹ Morus, 70-98.

museums. Charles Willson Peale was a gifted portraitist with strong interests in natural history. In 1784 he added a portrait gallery to his studio; visitors were even more interested in his artifacts. Over the following decades he created the prototype for museums to come such as the American Museum of Natural History in New York. In addition to the portraits he added cases of wildlife specimens, posed before painted backdrops of their habitats. He and his sons also collected artifacts from Native American and other cultures. His eclectic museum, the finest of American museums at the turn of the nineteenth century, featured the skeleton of the first mastodon unearthed in America; it also included hundreds of artfully preserved birds and insects, mineral displays, examples of the industrial arts, waxwork figures representing the different races of mankind, model machinery, and nightly lectures.⁶⁰

His son Rubens Peale, who headed the museum from 1810-1821, after Peale retired, believed not only "scientific entertainment" but other entertainments to be a promising strategy to combat rising rent. The museum offered concerts and performances of mesmerism. On Tuesday and Thursday evenings Rubens arranged for lectures which might include chemical experiments that offered visual delights; ungainly electrical apparatus would also be rolled into the hall, and Rubens or another performer would work the static electricity generators to

⁶⁰ For a history of Peale's many enterprises, see Charles Coleman Sellers, Mr. Peale's Museum (New York: W.W. Norton, 1980).

create sparks, cause dolls to dance, detonate soap bubbles, knock down a "thunder house," and fire a brass gas cannon.⁶¹

Peale's Museum inspired many imitations, including museums that Charles Peale's sons Rubens and Rembrandt opened in Baltimore and New York City, but like the original, the emphasis of these museums was largely on natural history and not on electrical and industrial marvels. If Peale's Museum offered a model for the natural history museums to later appear at mid-century, it also offered a model for P.T. Barnum's American Museum and the many dime museums of the late nineteenth century that focused on novelties, freak shows, and theater. Outside such museum venues, public offerings of science in America were left largely to high-brow lyceum lecturers, to visiting scientists like Dionysius Lardner, who enjoyed putting on a flashy show, and to itinerant peddlers of scientific wonders such as Charles Come.

The lectures and entertainments promoted by the middle and upper class necessarily relied on the philosophy of Republicanism, and also responded to evangelical currents and the corresponding demand for moral entertainments. Republican ideology, long-promoted by theorists of democracy, insisted that in order to maintain a flourishing and virtuous democracy, all citizens, particularly those entrusted with the vote, needed to be virtuous, informed, and of sound moral judgement. Public lectures, accordingly, should have a sound moral core and be

⁶¹ Sellers, 243-44.

of educational value. After the religious fervor of the Second Great Awakening swept through America's middle and upper classes in the early nineteenth century, the demand for moral entertainment grew. If a strong educational—if not evangelical—bent had always been Charles Peale's goal,⁶² such currents also affected lowbrow entertainment forums. For example, sensing the temperament of the era, P.T. Barnum determined to make his new American Museum in New York City a comfortable place for middle-class women to visit with their children. To do so, he surrounded his human oddities and wondrous frauds with natural history specimens and portraits purchased from Peale's collections. Barnum's museum theater likewise staged moral entertainments such as temperance plays. Unlike many other theaters, in Barnum's museum, disorderly men and women of dubious virtue were not permitted admission.⁶³

Even more obviously than Barnum's American Museum, the Crystal Palace in New York continued Peale's premise of offering visitors Republican

⁶² Both Sellers's book and David Brigham's later study of Peale have emphasized the implicit moralizing to be found in Peale's displays. He thought of his museum as a "Temple" and citadel of wisdom. Animals were described in terms of their moral temperament, as in a medieval bestiary, and lessons were to be learned about cooperation, and about nature's organizing principle, the great chain of being—a philosophical belief which emphasized that every creature, plant, and mineral had its proper place in God's scheme. Peale rightly can be understood as a supporter of the existing class structure. See David Brigham, Public Culture in the Early Republic: Peale's Museum and its Audience (Washington DC: Smithsonian Institution Press, 1995). In the 1830s and 1840s, rising rents, competition, and changing public tastes led Rubens and Titian Peale to allow musical concerts, novelty acts, and even "freaks" such as a black albino to be displayed. With Peale's museum as a model, it would appear that the Republican education model had already fused with the "gee-whiz" entertainment mode in the Jacksonian era, foreshadowing the declension Burnham saved for the twentieth century.

⁶³For a discussion of Barnum's transformation from raffish confidence man to middle class exemplar, See Bluford Adams, E Pluribus Barnum (Minneapolis: University of Minnesota Press, 1997).

uplift and education. Its walls of glass invited inspection and promised to educate, not mystify. Highbrow critics were thrilled at the Crystal Palace's aesthetic and educational value. One such critic suggested that a diligent traveler could spend years or even lifetimes trying to see all the marvels and gain all the knowledge of the history of art and industry that the exposition easily offered to a visitor in a few visits.⁶⁴

The lyceum lecture circuit also appealed to the Republican virtues of its audiences. The duty of the lyceum lecturer—Ralph Waldo Emerson was one of the era's most prominent—was to educate and uplift. What were the science lectures like? At best educational but not dull. Benjamin Silliman was one of the best-known of the science lecturers of the nineteenth century in America. A prominent scientist, Silliman lectured at Yale, sent specimens to Peale, edited the American Journal of Science, helped superintend several collections at the Crystal Palace exhibition, wrote chemistry textbooks, one of which went into at least fifty editions, as well as texts on physics, religion, geology, travel, and industries such as mining and sugar-making. He also gave chemistry demonstrations and lectures on the lyceum circuit in which he offered the spectacle of chemicals glowing and combusting, while explaining the chemical changes he was inducing. By all accounts his presentations balanced wonder with elucidation.

⁶⁴ "Our Crystal Palace," Putnam's, 2, no. 8, August 1853, 127.

A contemporary of Silliman, Dionysius Lardner was another tireless science popularizer. Prior to touring America, he had taught mathematics and astronomy at London University and edited the multi-volume Cabinet Cyclopaedia. To this encyclopedia, which surveyed the sciences and industrial arts, he contributed separate volumes on electricity, magnetism and meteorology, telegraphy, astronomy, the steam engine, and physics. In the early 1840s, a scandalous love affair brought him to the United States and his new role as a public lecturer. He ridiculed the stuffy performances of lyceum lecturers and instead traveled with a show that approximated the offerings of one of England's galleries of practical science. His "philosophical apparatus" included electromagnets, an oxy-hydrogen microscope, an oxy-hydrogen blowpipe, and numerous magic lantern slides that canvassed astronomy, meteorology, and even episodes from the life of George Washington. Lardner performed, often with musical accompaniment, before theatrical backdrops and props appropriate to a natural philosopher—with globes and philosophical instruments in the foreground before a backdrop of library shelves. Predictably, Lardner gained popular acclaim but disdain from America's scientific elite—this despite his status as a member of the Royal Society.⁶⁵ Soon after, his lectures were published.

Smaller-scale itinerants such as Charles Come learned from lecturers like Silliman and Lardner. Both figured in Come's library. An anthology that Come

⁶⁵Much of my information on Lardner I have drawn from Elizabeth P. Stewart's paper "Diffusion

owned, titled Electro-Magnetism (1838), for example, included one of Silliman's articles. In the piece, the Yale professor waxed eloquent about galvanism and revealed his own intense excitement about electricity. Silliman called it this "new power of great but unknown energy" which could be found in muscular convulsions, chemical decompositions, "the solar brightness of the galvanic light," and perhaps even might be "the grand secret of terrestrial magnetism."⁶⁶ Such rhetoric easily suited the small-town circuit Came traveled.

"I Bid You Hope"

Charles Came began his career as a wandering lecturer and healer in the 1840s.⁶⁷ The opening of the Erie Canal, which made small towns in New York accessible to large-scale manufacture, decreased the profitability of his cabinet-making business in Pittsford, New York, in the Rochester region. He once wrote of the assistant who was maintaining the cabinet business, "tell Mr. Hall to keep all things wright and keep up good courage till I come he may make what he is a

is the Watchword." National Museum of American History Colloquium, 14 June 2000.

⁶⁶ C. Giglietta, ed., Electro-Magnetism (Philadelphia: Carey & Hart, 1838), 22. NMAH.

⁶⁷ In addition to my own research at the Charles Came Collection at the National Museum of American History, I have also relied on the following articles, collected by Roger Sherman of the NMAH about Came: Edmund S. Carpenter "The Strange Case of Dr. Came and the Sleeping Man," New York Folklore Quarterly, vol. 5, no.4, Winter, 1949, 241-56; Joan Lynn Schild, "Dr. Came, The Lightning Man," Rochester Historical Society Scrapbook, vol. 1, 1950, 9-24; Leatrice M. Kemp, "Dr. Charles Came, M.D.," (unpublished), December, 1987; Roger Sherman, "Charles Came, Itinerant Science Lecturer, and his 'Splendid Apparatus,'" Rittenhouse, vol. 5, no. 4, August, 1991, 118-128; and Elizabeth Stewart "Diffusion Is the Watchword of the Age," National Museum of American History Colloquium, 14 June, 2001.

mind to and I will make lightning and see which will do the best.”⁶⁸ Details of Came’s small-time show business career are known because he wrote numerous such letters to his second wife while touring New York for a period of about eight years.

Came lectured and exhibited scientific phenomena to music from his self-playing mechanical organs, while he stood below a proscenium canvas that included painted images of an eagle at its top, two flanking columns, and beside the columns, urns issuing flames. These flames suggested ancient mysteries and contributed to the awe Came attempted to evoke. The other equipment he traveled with included electro-static generators and leyden jars that had been common to electrical demonstrators since Benjamin Franklin’s days. These machines could produce and store energy that could then be released as sparks, shocks, or small bolts of “lightning” that would break down a small model “thunder house.” Came also had an orrery that modeled the revolution of the planets around the sun, pneumatic devices that showed that in a vacuum a feather and coin fell at the same speed, and a model telegraph with which members of his audience could send messages to one another. He also traveled with two “dissolving” magic lanterns (which allowed one projection to fade into the next) and slides to give lectures on astronomy, phrenology, biblical subjects, “spirit landscapes,” architecture, and on the battles of the Mexican War and Civil War. He also used

⁶⁸ Charles Came to Cynthia Came. 20 April, 1845. Charles Came Collection, NMAH.

magic lantern slides of microbes, fungi, and miniatures such as the “mouth of a beetle” to emulate the projecting “gas microscopes” that performers like Dionysius Lardner traveled with. One handbill announced Came would exhibit “one of the most Powerful Lucernal microscopes, the latest improvement of the age, for assisting the Human eye to discover the inhabitants of a Drop of Water...this ingenuous Instrument, which alone is worth the price of admission.”⁶⁹

Came traveled New York state in a wagon that held all his bulky equipment and promotional material. Pulled by his horse Fanny, he toured muddy roads, warmed his feet on a charcoal burner during cold weather, and wrote home often of his loneliness, the difficult weather and road conditions, and about the unpleasant bedding and meals. He bragged about cures he had managed, reported whether or not a town had pretty girls and sent home money ranging from \$1 to \$4 from his latest shows. He generally charged twenty cents admission to men, less for children and women, and his modest profits suggest he at times gained audiences of about fifty people. The modest income also suggests he was not profiteering as a hawker of patent medicines. For some of his tours his advance man Longfellow put up posters, but usually Came traveled on off-days to post handbills in towns he then traveled to with his equipment. He was very fond of his horse Fanny, though he grumbled when it cost more to stable her than to house

⁶⁹ Handbill. Item .513. Charles Came Collection, NMAH.

himself. He liked to describe the landscapes, occasionally quite lyrically. A caring father, he constantly suggested possible remedies for his children's ailments, including "strong beer to fat up" one of his sickly girls. He also wrote of his longing to be home to work his small farm and urged his oldest son at home to weed, to provide the cow and calf with hay, and otherwise tend to the gardening and farming chores. Occasionally he sent home, via the canal or railroads, groceries and lumber he had accepted in trade for his doctoring. His letters reflect his mercurial changes in moods, as he quickly altered from boasting to worrying about his exploits. Often he would start a letter ordering a member of his family to take a particular action but later in the same letter change his mind. The tone of his letters was not that of a hard-boiled confidence artist eager to humbug the public. Nevertheless, he had no qualms about stretching the truth at times, as when he called his magic lantern images the magnifications of a Lucernal Microscope.

Came's electrical wonder show was similar to that of other itinerant performers, some of whom he corresponded with, and others of whom he borrowed poster copy from. Their acts often had similar outlines and featured the same effects. These were medicine shows that relied on technological apparatus. A poster circa 1849 for the "Scientific Exhibition!" of Messrs. Howig & Langdon, like those of Came, mixed copy about electrical pranks with a variety of demonstrations and offers of electrical healing. Howig and Langdon boasted of

their new “apparatus for illustrating the LIGHTNING’s power,” as well as their “Electric Telegraph.” Their satirical act called “The Magic Gold Piece” encouraged locals to try to reach into a bucket of electrified water to get a gold coin fresh from the goldfields of California; they also encouraged audience members to try to wear “Magnetic Slippers! Which produce involuntary dancing by the person wearing them.” Finally, they mention their electro-therapy devices: “Electricity will be applied through the Medical Coil to persons who desire it, for the cure of Rheumatism, Deafness, Paralysis” and other ailments.⁷⁰

In a similar vein B.A. Bamber, who ran the “Great Dime Show,” offered magic lantern slides and comic sketches, and promised “Electricity without Extra Charge” from “a very fine galvanic battery.” He insisted this galvanic treatment was an “excellent remedy for rheumatism, neuralgia and headache” and urged customers to “Be sure to come before the show begins if you want to try it.”⁷¹ Another performer of the era, Mr. J. St. John, offered “Electrical and Magnetic Experiments.” These included medical treatments: “shocks administered to those who desire them for medical use free of charge.” Likewise, he promised “shocks given for amusement first to the ladies, then to the gentlemen.”⁷² Magnetic Slippers were also featured, as well as a “Miser’s Cup” offered for free to anyone able to take the charged cup away from a performer standing on an insulated pad.

⁷⁰ Item .562. Charles Came Collection, NMAH.

⁷¹ Item .563, NMAH.

⁷² Item 1992.3092.566, NMAH.

J. St. John assured parents that his show had moral and educational value and concluded his poster with the slogan, “Deprive them of moral, and they will seek immoral entertainments.”

Perhaps the most involved electro-medical poster, which Came relied on for one of his own medical posters, was printed by Professor C.F. Bolles, who made great promises for cures. His poster was addressed “TO THE DISEASED,” and after mentioning many ailments, its copy insisted, “I BID YOU HOPE!” His poster then elaborated the connection between electricity and vitality, insisting that they were not identical but that electricity was one of the components of vitality and could help induce health. Bolles offered to cure numerous ailments electrically, including pulmonary consumption, liver disease, paralysis, palsy, and other conditions which other physicians deemed incurable. He stressed, however, “I am as opposed to every species of quackery, and the deceptions which mere pretenders to medical science practice upon the people, as any living man.”

Came had a poster printed up almost identical to that of C.F. Bolles. It also was headed “TO THE DISEASED” and promised to help restore to health those “considered incurable.” Paraphrasing Bolles, Came’s poster added, “The highest and most active of all the elements constituting life is ELECTRICITY; it is the organizing, the vitalizing, and equalizing Agent of Nature’s God.” The poster explained that medical lectures would be offered and encouraged the public to visit both Charles Came, “The Great Electrician and Successful Operator,” and

his partner in this venture, M.L. Vosburg, a physician of the eclectic school which generally offered herbal cures. Their poster included a long list of diseases they could cure such as pulmonary consumption, liver disease, paralysis, bronchitis, rheumatism, ulcers, spinal complaints, piles, St. Vitus's Dance, and what would be more telling for Came when he attempted to exhibit his Sleeping Man, "suspended animation."

Such promotions make Came and his colleagues appear to be mountebanks. Big patent medicine manufacturers did not formalize large-scale medicine shows until later in the nineteenth century, but hundreds of "quacks" undoubtedly were touring the country then, putting on makeshift performances and selling elixirs of questionable value. Such elixirs were extremely common. In the 1840s, many newspapers relied heavily on patent medicine advertisements for financing. Much of the page space in the New York Sun of the 1840s, for example, was full of long-winded advertisements for irregular doctors, and wonder medicines such as "Dr. Wheeler's Balsam," which could cure cramps, spasms, and dysentery, and "Parr's Life Pills," which could dispatch dyspepsia, bilious complaints, and cholera in the early stages. Many of these advertisements pointed out the shortcomings of "regular" doctors, such as Dr. Morrison's statement "No Cure No Charge No Mercury," and "Richardson & Company's

Celebrated American Panacea,” which treated rheumatism, scrofula, fever sores, sore eyes, “and all diseases or pains arising from an injudicious use of mercury.”⁷³

Nostrums, frauds, irregular doctors, and medicine salesmen abounded in the mid-nineteenth century. Rogan Taylor has argued that the traveling mountebanks who sold nostrums—common in Europe for centuries and also plentiful in the Americas from their first settlement—were modern analogues to tribal shamans.⁷⁴ If their compounds did not necessarily heal, their shows offered entertainment and the possibility of miracles. The mountebank presented wonder shows much like the rituals of “death and resurrection” that shamans offered. At the beginning of their curing ritual, like the commencement of a sales pitch, shamans traditionally dramatized the story of their initiation to explain how they had gained their awesome powers. In such initiation journeys, the shaman traveled into the world of spirits and went through an often grisly death and dismemberment. This death was followed by a resurrection in which the shaman’s body was reassembled with the aid of helping spirits. The death and resurrection motif of the initiation was recreated in subsequent healing rituals. Shamans would offer “miracles,” whether performing great leaps, walking on fire, offering sleight of hand tricks, hacking up and resurrecting an animal or human assistant, or providing other evidence of extraordinary powers.

⁷³ These advertisements were all found in the New York Sun, 30 July 1844. Came had just begun his career as showman and physician in upstate New York at this time.

⁷⁴ Rogan Taylor, The Death and Resurrection Show (London: A. Blond, 1985).

As Taylor has pointed out, mountebanks and traveling showmen mirrored such narrative patterns in their stagings.⁷⁵ In Commedia del Arte, the clown-hero would often travel to Hell, see wonders, and have his limbs chopped off, then miraculously restored. Punch, too, could descend to Hell and defy the devil or death. European mountebanks who sold medicines, often dressed as wizards or in Orientalist garb, offered tricks like those of shamans to evoke awe in audiences. A historian of the medicine show described one mountebank who handled poisonous snakes and others who "gashed their arms with knives and mysteriously healed them again." Likewise, a performer named John Brenon who traveled New York in 1787 with his wife offered balloon ascensions, slack wire performances, songs, sleight of hand tricks, and also would urge an audience member to cut off the head of a fowl which Brenon would then restore to life.⁷⁶ Such acts conferred on performers the supernatural powers that shamans claimed to gain through their symbolic deaths and resurrections—the healing powers granted by spirits.

Came and his peers offered an updated variant of the medicine show with their substitution of modern technological wonders for the older entertainment forms of juggling, sleight of hand, and singing. Instead of a voyage into the world of spirits, they offered a glimpse into the secrets scientists had teased from

⁷⁵ Throughout his book, Taylor argued that all modern entertainment descended from the shaman's ritual. In so doing, he followed up Mircea Eliade's concluding sentence to his groundbreaking work on shamanism: "What a magnificent book remains to be written on the ecstatic 'sources' of epic and lyric poetry, on the prehistory of dramatic spectacles, and, in general, on the fabulous worlds discovered, explored, and described by the ancient shamans..." See Mircea Eliade, Shamanism, Archaic Techniques of Ecstasy (New York: Pantheon Books. 1964), 511.

Nature. Came offered genuine education, for example, with his orrery and other devices that showed the movements of the planets and explained the seasons. His vacuum pump—which he used to demonstrate that a feather and coin dropped at the same speed in the absence of air—established the truth of Galileo's insights into falling bodies. Significantly, Came and his peers presented electricity as the latest wonder force, with healing power similar to that once offered by denizens of the spirit world. Further, his lantern slides suggested the hidden wonders of the microscopic world, while his slides of heavenly bodies offered audiences a macrocosmic view; the strategy of contrasting the wonders of the microcosm to those of the macrocosm has remained a fixture of wonder shows through contemporary Imax theater film presentations.

No confidence man, Came took his lecturing and doctoring seriously. Unlike the traveling quacks who set up small consulting tents beneath their stages to offer quick fixes, Came's letters suggest that he carefully tended patients on his travels. He relied on his showman's poetic license but was a concerned physician who helped many people – perhaps more with folk remedies than with electricity. His sincerity is demonstrated by the fact that he relied on his own remedies for doctoring himself and his family. In the winter of 1852 he wrote to his wife that he had been feeling sick. “I finally went to my medicines and took a good dose of my Elixer—and went to bed and got up in an hour and did not feel much of any

⁷⁶ Brooks McNamara, Step Right Up (Jackson: University Press of Mississippi, 1995 [1976]), 7.

better I then went and took another dose and went to bed and sweat some I have got up this morning and feel a little better.”⁷⁷ Though not the stuff of a grand testimonial, this letter does reveal he took his own medications seriously. In another letter he wrote just prior to his venture to New York City, Came advised his ten-year-old daughter Mary Eliza to “take freely of the [Nervium?] and Elixer be Electrised everyday rub her with the brandy.”⁷⁸ Later, he encouraged his wife to consult with a local physician and with some hesitation told his wife to allow that doctor to let some of their daughter's blood.

During the era that Charles Came was doctoring, most American physicians, particularly in rural areas, were lay healers. Some had attended eclectic or homeopathic schools. They tended to rely on herbal remedies and folk cures which may have been less harmful than the blood-letting and heroic compounds that academy-trained physicians administered to wealthier patients. Came prided himself on his doctoring. In the summer of 1850, he traveled to rural Michigan to help his ill sister Lucretia, on whom the local doctors had given up. He lectured there several times and gained esteem in the community. He wrote home, “There is a good chance for a good Doctor here there is 5 or 6 of them within two or three miles but they are not verry good they thought that Lucretia could not be helped and by my coming here and helping her it brought others here

⁷⁷ Charles Came to Cynthia Came. 6 December, 1852. Charles Came Collection, NMAH.

⁷⁸ Charles Came to Cynthia Came. 16 July 1853. Charles Came Collection, NMAH.

and I now have about as much as I can attend to...”⁷⁹ In a letter the following week he repeated how he was gaining the confidence of the people with his treatments and proudly described curing one family of “fits.” Often prone to new inspirations, he began to toy with the idea of moving to Michigan, where he had an appreciative audience. A few days later he reported, “the people will not hear about my going home.”⁸⁰ By the standards of the day, Came was likely a better folk doctor than he was a showman.

Considering that Spiritualism came to prominence precisely when he was working as a showmen, it is surprising that Came never incorporated references to Spiritualism in his lectures. A movement that swept not only America but also Europe, Spiritualism was launched in upstate New York in 1848. The Fox sisters of Hydesville began to hear strange rapping sounds in their house that year that allowed them, purportedly, to communicate with spirits as one might communicate through the means of telegraphy. Spiritualists offered séances in homes and theaters. Stage magicians of the era quickly incorporated references to Spiritualism in their acts, adding rapping hands, and strange materializations and escapes in their performances. Likewise, Came’s contemporary, the electrical lecturer and healer J. St. John, included a séance reference in his act. “Raps

⁷⁹Charles Came to Cynthia Came. 9 July 1850. Charles Came Collection, NMAH.

⁸⁰ Charles Came to Cynthia Came. 19 July 1850. Charles Came Collection, NMAH.

distinctly audible to the audience will be produced describing personal appearances, uses, and cetera, exciting great curiosity in the minds of people.”⁸¹

Came, however, seemed to have the rational and non-religious turn of mind that his interest in astronomy, physics, electricity and psychology would suggest. Came’s thoughts appear little influenced by the wave of evangelism that reached his upstate New York community in his formative years. He seldom mentioned God in any of his letters, except when he was under extreme duress, as for example after the death of his sister in 1860. He mentions visiting churches on a few Sundays, but this seems largely as a way to pass the time. Likewise, he records staying at a Temperance Hotel on one occasion but seems less interested in temperance ideology than in the fact that the room was warm and the bed comfortable. His letters also had a mildly ribald streak that would not be appropriate to an evangelical Christian. He remarked in one early letter to his recently-married second wife, “there is a great many girls out here I do not know what to do with them all there is some that is about as nice as anything I have seen yet The Lightning Man is all the go with them...the way I send the Lightning through them out this way is not ways slow I will assure you But I shall keep shady about some things.”⁸² Such references, which gradually fade from his letters and appear only to indicate his high spirits and enthusiasm, presumably would not be welcome in an evangelical household.

⁸¹ Item .566. Charles Came Collection. NMAH.

Came's religiosity was relegated primarily to his shows, and most likely was a ploy for gaining the approval of the town leaders where he performed. One of his magic lantern lectures included "fifty splendid paintings" of "Sacred and Ancient History" as well as "Bible Scenes" from the "Land of Palestine." He often offered these lectures at schools and added the notice on his poster, "Clergymen and trustees invited to attend, free."⁸³ Yet he paired this lecture with a follow up on astronomy and phrenology in which he also offered phrenological readings. Conceivably, Came presented his magic lantern shows of "Spirit Scenes" in a Spiritualist context. However, it is more likely that this was his way of promoting the capabilities of his "dissolving" magic lanterns and the effects they produced when he exhibited views of landscapes and ancient sites.

Despite his apparent lack of interest in religion and failure to take advantage of the Spiritualism fad as had J. St. Johns and the era's stage magicians, Came does indicate some interest in mesmerism. In this sense, he promoted not only science and technology, but the faith that human powers were also expanding, a notion which has always been common to the wonder show. Came preferred that those unfolding human powers have a scientific basis. He was, for instance, a strong believer in phrenology, an early forerunner of modern psychology. Phrenologists believed that the careful examination and measurement of an individual's skull and physiognomy could indicate the individual's character

⁸² Charles Came to Cynthia Came. 20 April 1845. Charles Came Collection, NMAH.

type. The individual would then have to take the initiative to improve his or her character in areas of deficiency. This "science" suggested some scientific basis to the self-improvement campaigns common to the era, and to the wonder show formula of heightened powers of the mind. Phrenology also was directly related to mesmerism in the then-popular technique of "phreno-mesmerism." Phreno-mesmerism was a fad in which mesmerists would stimulate different parts of the skull to encourage improvement in character traits found wanting. Mesmerism was also considered a medical technique in its own right. Mesmerists of the era would place maidens into trances and these subjects would then offer evidence of their telepathic abilities and clairvoyance. These somnambulists often would diagnose illnesses and suggest cures to audience members or patients. In the 1850s a faddish interest in "electro-biology" – another name for mesmerism—was sweeping America, and this may have been yet another lure to gain Came's attention.

Though none of his posters mention hypnotism or mesmerism as part of his performances or healing, a scrap of a lecture note in his handwriting and one of his letters point to his interest and apparent proficiency in mesmerism.⁸⁴ In the lecture notes he promised to perform an "amusing experiment" that involved "biology or the electrical science of Life." He continued, a "person in a perfectly wakeful state...shall voluntarily come forward from among the audience will be

⁸³ Item .525. Charles Came Collection, NMAH.

experimented upon shutting their eyes they will be unable to open them.” This indicates that he indeed did practice stage hypnotism which also promoted dramatic yet “scientific” powers of mind.

A reference to mesmerism in a letter from 1850 was even more dramatic. In this letter, Came described how he was performing three nights successively in the town of Oak Orchard, New York. He learned of a woman who had drowned while attempting “to cross the Creek in the place which is large and deep.” As many as a hundred men had been searching over a week for her body. Her husband had given up hope when Came volunteered to help. “So I immediately went to person who I never saw before three miles from the place [of drowning] mesmerized him and put him in a clairvoyant state and got all the particular minute description of the place where she lay...they went immediately to the place and took her out of the water with hooks fastened to long poles.” Came reported home that both the husband and “the whole of this community is astonished at this circumstance it will be published in all of the papers...I will give a more full account of it when I get back.”⁸⁵ Unfortunately, Came never commented again about this incident or any other forays into mesmerism.

His interests in phrenology, and these sparse mentions of mesmerism, do suggest that Came was eager to place self-improvement and the mysteries of mesmerism within a scientific context. And, curiously, Came began to mimic the

⁸⁴ Charles Came Folder. Charles Came Collection, NMAH.

act of the traveling mesmerist when he began his promotion of his Sleeping Man. An itinerant mesmerist generally would travel with a subject known as a somnambulist who could be placed in trances. In the summer of 1853 Came took up with his own Sleeping Man; this sleeper, however, showed no enhanced powers of mind while in his trance. He remained lost to the world, a case of “suspended animation.” Cornelius Vroman, a hired man on the farm of Moses Jennings, in Clarkson, New York, had been in a coma or cataleptic state for nearly five years when Came visited. All hopes for a cure had long-since vanished, so Came made a deal with the farmer Jennings to exhibit Vroman, or the Sleeping Man, as a great medical attraction.

In his letters, Came made excited pronouncements to his family about the Sleeping Man’s lucrative promise, and energetically set out to make a “strike” with his new attraction. He began exhibiting the Sleeping Man to upstate crowds along the Erie Canal and gained audiences in cities such as Albany and Syracuse. He wrote to his wife, “I think I can make something worth laboring for if I can control the motor although I do not get but a third but I think I can make a Thousand Dollars with him.”⁸⁶ This was a grand promise for a man who seldom gained more than three dollars profit from a performance.

Came was eager to seize this opportunity. Life on the road had become less enjoyable as he aged, and he had been greatly saddened when his horse

⁸⁵ Charles Came to Cynthia Came. 7 March 1850. Charles Came Collection, NMAH.

Fanny had died in an accident the previous winter. He persuaded himself that the Sleeping Man was his ticket to renown and a higher status in society. His letters took a grandiose turn. Of his difficulties negotiating with Vroman's "master," the farmer Jennings, he remarked, "he finds I am not to be trifled with."⁸⁷ To gain status and an edge in promoting the Sleeping Man as a moral entertainment, Came began to collect letters of introduction from leading citizens in Syracuse. In Albany he commissioned a "great artist" to illustrate for a lithograph the Sleeping Man in the several postures he could hold while in his coma: lying down, sitting up, and standing. In Saratoga Springs Came told of gaining letters of introduction from "a number of the greatest men of our State, and they just begin to find out who they are dealing with and consider it quite a privilege to talk with me."⁸⁸ He urged his teenage son Raphael to keep out of bad company and reminded him, "I have never had anyone to lead me through the world since I was your age and you see what I now can do with those who think themselves the highest class in society. They are obliged to take notice of what I say."⁸⁹ He also improved his wardrobe to meet the cosmopolitan standards of the resort town of Saratoga Springs when exhibiting there. Offering the explanation that his feet were "all blistered," he bought new socks and a pair of light pumps in Saratoga Springs; he

⁸⁶ Charles Came to Cynthia Came. 26 June, 1853. Charles Came Collection, NMAH.

⁸⁷ Ibid.

⁸⁸ Charles Came to Cynthia Came. 24 July, 1853. Charles Came Collection, NMAH.

⁸⁹ Charles Came to Cynthia Came. 23 July, 1853. Charles Came Collection, NMAH.

remarked on the pleasures of being waited on and dressed in luxury. “A slave bought me a nice stock and shirt collar they are so verry fashionable.”⁹⁰

But Came was ultimately more comfortable with rural life and rustic audiences. He was shocked at the high costs of room, board and business in Saratoga Springs and at its opulence. Grand hotels that held two thousand boarders “all paying from two Dollars to three a day” seemed both wondrous and outrageous to him. Because of high costs, he barely broke even in Saratoga Springs, yet remained optimistic and began short trips to New York City to prepare the way for the Sleeping Man. As in Saratoga Springs, Came felt out of place in cosmopolitan New York. It was crowded and full of rowdies waiting to prey on strangers. Traffic continued all night long. During one dismal night he wrote his wife, “It is now two o clock at night and the street is full of carriages just as though it was in the day time they are going all night long and the stores full of people all night every thing going on that can be thought of and somethings that cant be hardly the city never gets still.”⁹¹ This lament is a far cry from his happy reports on the richness of soil, or the promising stands of timber and abundance of game he wrote of in his letters from upstate New York and Michigan. If Vroman, his exhibit, opposed nature by doing nothing but sleep, Came felt the city opposed nature with its never-ending commerce and its citizenry who refused to sleep.

⁹⁰ Charles Came to Cynthia Came. 24 July, 1853. Charles Came Collection, NMAH.

Despite such discomforts and trials in the city that never sleeps, Came remained optimistic. He visited the Crystal Palace but did not go in—presumably because he had not the time or money. He continued to gain letters of introduction, worked on a pamphlet and planned to have lithographs “in every window of him all along the streets. I believe there is better days coming...”⁹² On August 13 he hired a physician to present the Sleeping Man to the “New York Medical Faculty,” asserting that “when tomorrow the results will be known it will forever establish the subject of the Sleeping Man and I think so much that it must raise an excitement.”⁹³ Edward R. Dixon, a leading New York physician, apparently wrote Came a letter extolling the virtues of his exhibit, and Came incorporated the letter in an advertisement, including a long quote ending with, “the physiologist and the philosopher will find in this case, now at Academy Hall, 663 Broadway, a subject of profound interest.”⁹⁴

Came continued publicity efforts by arranging a phrenological reading of the Sleeping Man with L.N. Fowler of the firm of Fowler and Wells. Yet the renowned phrenologist was unable to say anything conclusive. Fowler’s reading noted of Vroman that “under favorable circumstances he would exhibit a fair share of practical common sense...but would not be brilliant, versatile, pliable, jealous, or enthusiastic in any sense of the term....His phrenology throws no light

⁹¹ Charles Came to Cynthia Came. 12 August, 1853. Charles Came Collection, NMAH.

⁹² Charles Came to Cynthia Came. 8 August, 1853. Charles Came Collection, NMAH.

⁹³ Charles Came to Cynthia Came. 12 August, 1853. Charles Came Collection, NMAH.

upon the phenomenon of continued sleeping. The organ of sleep as recognized by Dr. Buchanan is developed in an average degree and there is no reason phrenologically speaking why he should remain in this state so long; or if there is such a reason we are not able to point it out at present."⁹⁵

Though he could not entirely admit it, Came sensed that he was in over his head. Suddenly stage-shy in the big city, he hired a lecturer. Bills were costly, printing was costly, renting a hall was costly. He began to see fabled showman P.T. Barnum as his out. "I want to make a bargain with Barnum if I can but he is not in the city now but will be next week."⁹⁶ Came was not able to arrange to exhibit his Sleeping Man until the middle of September. The hall would cost him \$150 a week and he thought he would earn at least \$50 after dividing with Jennings. On September 13 he offered a free exhibition of the Sleeping Man to clergyman, faculty, and the press.

Two press notices appeared just prior to this first exhibition and one week following. The first, from September 9, was titled "A Curious Case."⁹⁷ It was as favorable as could be imagined. The writer noted, "Medical men regard this case with the profoundest interest." This writer struggled to find a narrative in which to place Vroman. The reporter wrote in extreme detail about Vroman's lack of

⁹⁴ Advertisement, New York Herald, 17 September, 1853, 5:6. An annotation of this clipping, procured by Elizabeth Stewart is in the files of Roger Sherman at the NMAH.

⁹⁵ "Phrenological Character of Mr. Cornelius Vrooman Given at Fowler and Wells Phrenological Cabinet Clinton Hall." 8 September 1853. Item .569. Charles Came Collection, NMAH.

⁹⁶ Charles Came to Cynthia Came. 20 August, 1853. Charles Came Collection, NMAH.

response to stimulus; he also mentioned Vroman had blisters and scars from various attempts—medical or otherwise—to awaken him. Other details mentioned about Vroman included such facts as “once he was left standing for three days;” and, on another occasion, he went without food for five days. Since falling asleep his weight had dropped from 160 pounds to 90 pounds. Occasionally he sighed or stirred. Vroman was capable of briefly waking up on occasion. This offered some dramatic possibilities. The author said, “The last time he awoke was while he was in Rochester, some ten weeks since, which gives us a hope that his waking hour now approaches, and that we may see him in his wakeful condition.” The author, following the lead of Dr. Dixon, thought Vroman a fascinating medical display. Also important from the standpoint of “moral entertainment,” the reporter attested that the exhibit lacked fraudulence: “There is not the slightest chance for any collusion or deception in the matter.”

A reporter from the New York Daily Tribune penned his own less-than thrilled reactions to the Sleeping Man in an article titled, “Disgusting Exhibitions.”⁹⁸ He pointedly described the wonderful displays of culture that the Crystal Palace offered to the public uptown, then questioned that same public’s low tastes for weird exhibitions. “The normal and beautiful are inadequate: the unnatural and hideous must be called into view. Hence it is that Broadway is

⁹⁷ “A Curious Case: The Man Who Has Slept Five Years,” New York Daily Times, 9 September, 1853, 2:5.

⁹⁸ “Disgusting Exhibitions,” New York Daily Tribune, 22 September, 1853 4:4.

never without one or more damnable monsters on exhibition.” The article went on to describe one such monster, a 700 pound "Fat Woman." Even worse was the Sleeping Man. “Here is a poor wretch, who, as Dr. Dixon says, has less vitality than an oyster, placed before the public gaze...He is woefully emaciated...a fierce degradation of manhood—not living, not dying, not dead...a thing that should be kept out of sight and notice, and yet he is pushed into the van of publicities.” This reporter refused to consider Vroman as a medical curiosity as did the Times reporter, and also insisted that the Sleeping Man could never be fit moral entertainment. In fact, Vroman was a living symbol of moral degradation that should be kept out of sight. He stood for the low tastes of the public and the assault on culture that resulted from the sensationalist press. Both reporters took a high-brow approach to the Sleeping Man but only the first accepted Came’s strategies for exhibiting Vroman in a “moral” and “educational” manner.

Despite this publicity, positive and negative, Came’s hope of causing a public stir with his medical spectacle failed. He suffered from poor timing, upsets, and an exhibit that lacked the flash and drama likely to draw in those with “low tastes.” Watching a sleeping man at most “sigh” when turned onto his side did not make for grand theater. Came hoped otherwise. He wrote his wife the week after opening that when he would “get the books and lithographs ready” his luck would change. Came apparently spent \$1,000 to print one thousand copies of a book detailing the life history of the Sleeping Man. He did not receive these books until

the first week in October when he had already decided to close the exhibition. In the meantime he was stuck in a cold hotel with the Sleeping Man and an unlikely senior partner, the elderly farmer Mr. Jennings, who, Came reported, “Is sick and what is worse than all he seems to be out of his right mind.”⁹⁹

True to his mercurial nature, in his darkest hour, when his hope for a big strike had soured, Came reported a happy dream, one that convinced him his luck would turn. “I dreamed last night that I was away from home and found Fanny with her leg all well as ever and she was fat and sleek and that I was going to carry my apparatus and three men and I dreamed of seeing some of the most beautiful silver money that I ever saw and that a part of it was going to be mine. I feel a little better in my mind.”¹⁰⁰

Came continued to put the best face on his enterprise even after closing the exhibit. Always the optimist, he awaited the expected offer from Barnum that never arrived, then insisted the thousand copies of the Sleeping Man’s life story would be of value. “I think I make something on them if nothing on the Sleeping Man.”¹⁰¹ A week later he gave up all hope and remarked, “I have made up my mind not to trouble my mind any more with the Sleeping Man so as to prevent me

⁹⁹ Charles Came to Cynthia Came. 29 September, 1853. Charles Came Collection, NMAH.

¹⁰⁰ Ibid.

¹⁰¹ Charles Came to Cynthia Came. 4 October, 1853. Charles Came Collection, NMAH.

from attending to my own affairs, I am verry sorry I ever had any thing to do with it.”¹⁰²

Came’s chronicle of life on the road largely ended with his failed efforts with the Sleeping Man. He continued as a showman into the 1860s, as his handbills for magic lantern shows of Civil War scenes indicate, but it is probable he spent more time at home and as a country doctor. Census information would indicate that if he never saw all the “beautiful silver money” that he could dream of, he did modestly prosper. The value of his real estate and personal property increased in total value from \$1,250 to \$3,800 between 1860 and 1870. When he died in 1881, his obituary emphasized his skills as a physician and suggested that if “he had more push” his development of a telegraph system in 1830 could have gained him fame and fortune. The obituary praised Came as an important disseminator of scientific ideas. The writer insisted that “many testimonials by teachers and professors of science all over acknowledged a great debt to Dr. Came for their start in science.”¹⁰³

Selling to Barnum

¹⁰² Charles Came to Cynthia Came. 11 October, 1853. Charles Came Collection, NMAH.

¹⁰³ "Funeral of Dr. Charles Came age 75," Rochester Daily Union and Advertiser, 7 November, 1881. Transcription, n.p. Roger Sherman's file on Charles Came, NMAH.

If these testimonials to Came's importance as a science educator can be believed, then it is worthwhile to reconsider the usual unstated assumptions of historians about how scientific knowledge is best transmitted in a democracy. Historians such as John C. Burnham and Roland Marchand have analyzed science popularizations to show how efforts in public education slowly faded from the republican ideals of the nineteenth century to "gee whiz" displays in the early twentieth century. According to this narrative, nineteenth century lecturers offered earnest artisans and the middle-class alike a solid grounding in science, which, presumably, made them better, more-informed citizens. Burnham argued that by the early twentieth century, corporate public relations departments were encouraging a new reign of ignorance by promoting "fun" science facts, while popular magazines ceased to try to explain "difficult" science and instead focused on mental health, sex, and hygiene. In short, science had become a commodity that must be easily digested. In this way, Burnham aligned science popularization with the rise of therapeutic culture in the twentieth century, coupling consumerist self-gratification to the public's growing interest in psychology and health.¹⁰⁴

While this argument holds for the mass culture treatment of science in the twentieth century, it depends on the assumption that only one "important" forum for science popularization existed in the nineteenth century. I would argue that in

¹⁰⁴ The concept of the rise of the therapeutic was developed in historian Donald Meyer's The Positive Thinkers (Garden City, N.Y.: Doubleday, 1965); the phrase itself served as the keynote to Philip Rieff's The Triumph of the Therapeutic (Chicago: University of Chicago Press, 1966).

the nineteenth century the separation between highbrow and lowbrow culture and the divide between education and entertainment were not as clear-cut as this argument would suggest.¹⁰⁵ Since Came's plebian lectures convinced many rural boys to pursue technical careers, it might be argued that wonder shows had as much value to democratic practice as more straightforward educational efforts. Likewise, Came's career and interest in phrenology reveals a therapeutic instinct well-entrenched in popular culture in the early nineteenth century and should make it clear that the derided "quack" shows of the nineteenth century do not serve as convenient foils to the nobler educational demonstrations of the same era aimed at stamping out "superstition." Came's integrity and impact call into question such simple judgements. However imperfect his understanding of science, Came championed it, and his demonstrations encouraged some members of his audience to further study.

It is also difficult to uphold the premise that republican ideology saturated antebellum culture. In his worst hour, when bogged down in his efforts to promote his Sleeping Man, Came clung to the dream of selling his attraction to the great showman Barnum. In that era, Barnum, if equally vilified and venerated, had reached celebrity status. 'Barnumization' had become a common phrase in essays and editorials decrying the spread of commercial culture, yet the public

Christopher Lasch further emphasized the concept in The Culture of Narcissism (New York: W.W. Norton, 1991 [1979]).

¹⁰⁵ Stewart also delineates the "complicated" intertwining of education and entertainment in nineteenth-century science demonstrations in her paper.

awaited his newest promotions eager to be 'deceived.'¹⁰⁶ In a curious twist, the Crystal Palace, which was supposed to represent the pinnacle of Republicanism, that is, everything that Came's "Disgusting Spectacle" of the Sleeping Man was not, also tried to sell to Barnum.

Barnum reigned only briefly at the Crystal Palace before complaining of financial mismanagement and resigning. That leading citizens had urged Barnum to take over the Crystal Palace underlines how ambiguous was the separation between highbrow and lowbrow culture, how permeable was the line between education and entertainment in the nineteenth century. The difference between "high" and "low" might have less to do with content than with social context and promotional methods. In the Crystal Palace, or a hospital anatomy theater, the Sleeping Man would no longer be a "disgusting spectacle" but a valuable aid to medical knowledge, and a prompter of philosophical ruminations about the tenuous nature of an individual's hold on the life force. Sought after both by Came and New York's business elite, Barnum had become the happy medium between "sleaze" and "class." This suggests that already during the antebellum era the republican project had either faded, or broadened considerably—a successful America needed not only noble citizens, but citizens educated by Barnum's conflations to appreciate the difference between style and substance.

¹⁰⁶ See James W. Cook, The Arts of Deception: Playing with Fraud in the Age of Barnum (Cambridge: Harvard University Press, 2001).

Commercial culture and its excesses had long before created a public wise to manipulative practices.

Came and his fellow itinerants should be seen not simply as charlatans, but as early promoters of the therapeutic and of the promise of the modern. That promise has always relied as much on emotion as intellect. In the science wonder shows aimed at rural audiences, from the first, therapy was as important as education. The electrical wonder shows that Charles Came, J. St. John, B.A. Bamber, Messrs. Howig and Langdon, and other itinerants promoted in nineteenth-century America incorporated the mixed motives of entertainment, education, and healing. All of these lecturers offered electrical healing, and often folk elixirs such as “Dr. C. Came’s Magnetic Vermifuge,” “Dr. C. Came’s Vegetable Strengthening Syrup,” and his “Magnetic Stimulating Drops.” Came's show, ultimately, was a variant of the medicine show that large patent medicine companies and independent operators would send on the road later in the century. Came relied on his knowledge of science, however imperfect, his scientific apparatus, his sparking machinery, and his impressive stage trimmings to create authority and instill a sense of wonder in his audiences. His proscenium painting with the urns of flames suggest the imagery usually associated with a wizard or shaman and his heightened spiritual powers. Came's wonder show, like that of a tribal shaman, prepared his audiences for the miracle of healing. He hoped both to educate and cure his audiences.

Such shows also could ease the rural public's fears of technology and of modernity. In the safety of the theater, for example, audience members could try to manipulate a telegraph and learn its protocols. The knowledge that these shows represented ultimately filtered down from centers of modernity such as London, New York and Boston. Sparking electrical apparatus and cosmopolitan innovations need not represent a new fearsome regime, such shows argued, but apparatus that could actually heal one's ills. In this sense, Came's shows were an elixir that calmed the rural public's fears about the approaching age of electricity. Further, Came's phrenological readings and mesmeric demonstrations, true to the wonder show script, encouraged an audience's beliefs that human potential could be unfolded alongside technological progress.

Chapter Two: Techno-Wizards

On December 31, 1883, William J. Hammer, one of Thomas Edison's chief assistants, threw a New Year's Eve party at his all-electric house in Newark. Dinner guests at twenty-five-year-old Hammer's "Electrical Diablerie" were offered non-stop wonders. As they walked up the first step to the house, the home's address blazed in tiny lights, the next step caused the doorbell to ring, the third opened the door and lit the gas jets in the hallway. An electrical device brushed snow and mud from the guest's shoes, then administered a shock to the shoes' wearer. All the furniture in the house was electrically booby-trapped. Sit in one chair and the lights would go out. Sit in another and drums would thunder or strange "rapping" noises would come from the floorboards. To lie down on the bed would cause the gas jets to go out and a phosphorescent moon to cross the ceiling. Electric telephones, cigar-lighters, bells, and other devices could be found in every room. A glowing pitcher of lemonade gave electric shocks to anyone foolish enough to pick it up. When a story-teller began to amuse friends with an anecdote, a giant dunce cap descended from the ceiling and covered him from head to toe.

During Hammer's New Year's Eve feast, an automaton named Jupiter sat at the head of the table shouting welcomes via an Edison cylinder. Hammer's menu included "Electric toast," "Wizard Pie," "Magnetic Cake," "Incandescent Lemonade," "Ohm-made Electric Current Pie," and "Electric Coffee." At midnight cannons discharged on the front porch, bricks rained down the chimney, the "Sheol Pudding" blazed with flames, the silverware was charged with electricity, and the "thunderbolt pudding" discharged black bolts (on springs) about the room. Jupiter raised his glass to drink, the room darkened and a luminous skeleton paraded the room, and Jupiter then shouted, "Happy New Year! Happy New Year!" The guests left the table to file past Hammer's younger sister, posed on a pedestal as "The Goddess of Electricity" with various electrical lights on her gown and dangling from her ears; they then went on the front porch to shoot fireworks by push button. A reporter commented that "the guests departed with a bewildered feeling that somehow they had been living half a century ahead of the new year."¹⁰⁷

Hammer's electric ghost house suggests both the prankish atmosphere that prevailed at Edison's Menlo Park, New Jersey, laboratory, and Hammer's awareness of the public's fascination with and fear of electricity in the late nineteenth century. The inhuman shouting of the automaton Jupiter, the parading skeleton, diabolical player-piano, and other "haunted house" effects played upon

¹⁰⁷ From William J. Hammer, "Electrical Diablerie." Promotional pamphlet. Hammer Collection,

the public perception that electricity was a magical force. Despite its sophomoric tone, Hammer's pageant commented on a serious Progressive era debate—and one with even greater relevance today in the post-atomic age: in what way was technology fundamental to progress and how might its diabolical potential be contained? Though arguably a civilizing force, electricity had its destructive aspects.

This debate pervaded the culture of the electricians and the general culture at the turn of the century. Whether the wonder show could be read as tragedy or comedy was still open for debate. Trade show exhibits, pageant floats, and articles in electrical trade journals all explored the dual vision of electricity and technology as an outgrowth of heavenly or demonic sources. The debate over the ethics of electrocution would shift these concerns to a pragmatic realm. To civilize electricity, it seemed necessary to associate the force with femininity. The lovely and innocent Goddess of Electricity was a regular visitor to the pages of electrical journals, just as she had appeared at Hammer's party.

The evolving electrical industry, not surprisingly, was an all-male enclave. Legendary male inventors often pushed the Goddess of Electricity from the spotlight. First and foremost was Thomas Edison. After earlier work introducing an improved stock ticker and other telegraphic equipment to the business realm, Edison unveiled his phonograph in 1878 and the press hailed him as the new

"wizard" of the age. Men like Edison, to a lesser extent his assistants like Hammer, as well as other engineers and inventors such as Nikola Tesla and Charles Steinmetz, became culture heroes. At the vanguard of technology, these men had seemingly wrestled with the earth's demonic forces to offer up new devices and possibilities. Edison was presented as a homespun Titan, Tesla as an otherworldly seer, and Steinmetz as General Electric's crippled genius who tamed lightning. Just as wizards might be practitioners of "black magic" or "white magic," so could the modern technical elite be envisioned as wizards or destructive mad scientists. Edison, Tesla and Steinmetz all toyed with these prescribed dramatic roles to further their ambitions, while industrialists and inventors offered dramatic pageantry to valorize the technological revolution then underway.

Historian John C. Burnham has explained the correlation of electricity with magic as the product of public relations experts in the early twentieth century.¹⁰⁸ Publicists were looking for an easy way to interest the public in the scientific capabilities of corporate laboratories. Edison biographer Paul Israel also has insisted that though cultural historians have argued that the "inventor as wizard" metaphor emerged to soothe public fears of technology, it was not Edison as "wizard" but Edison as "man of the people" that fascinated the American

¹⁰⁸ See John C. Burnham, How Science Lost and Superstition Won (New Brunswick: Rutgers University Press, 1987), 31-44.

public.¹⁰⁹ Though this may be true of Edison, perhaps the first figure in the history of technology to receive the wizard appellation, this does not explain why the press dubbed many other inventors and scientists who were not men of the people as wizards. Likewise, the theories of neither Burnham nor Israel can explain why nineteenth-century electrical industry trade journals and industrial trade shows, whose audiences were comprised of members of the technical elite, also nurtured the "electricity as magic" metaphor. To dismiss this interest as simple irony would ignore the psychoanalytic insight that "mere" jokes reveal genuine fears and concerns.

The connection of magic and science emerged from the public and the technical communities as much as it was foisted on the public by the corporate imagination. The inventor as wizard was very much a favored trope of the press from the 1880s through the 1930s. Not surprisingly, this was also a time when Darwinian doctrine, with its atheistic implications, was becoming increasingly mainstream. During this period, the press often asked inventors to pontificate on the role of religion in the scientific age. Some of the aura of a priesthood was inevitably transferred to the scientists. In the public eye, the inventor could blend the traits of the scientist, the artist, and the mystic. Nikola Tesla's public persona was more that of a romantic artist than that of the rough and tumble man of affairs, and Steinmetz's and Edison's eagerness to comment on religious issues all

¹⁰⁹ Paul Israel, Edison: A Life of Invention (New York: John Wiley and Sons, Inc., 1998), 155-56.

illustrate the odd symbiosis between science and the supernatural that this chapter explores.

Towards the Electrical Wedding

A reporter for the New York Sun first dubbed Edison the "Wizard of Menlo Park" in an interview in 1878, shortly after the world was stunned by Edison's wonderful "talking machine," the phonograph. The appellation stuck. An 1879 illustration of Edison titled "The Wizard's Search" shows the inventor in a full wizard's gown and cap, his costume inscribed with scientific emblems. The inventor is shown climbing up an unknown path, seeming to bring along with him the illumination of the sun, perched behind his shoulder.

The concept of technology as not only a new source of progress, but also an expression of sorcery or magic appeared throughout the popular press at the turn of the century. Though often tongue in cheek, such references suggested both the utopian possibilities of science and a healthy misgiving about the inevitability of progress. Utopian visions of a dawning Age of Electricity dueled with a vision of the world as Hammer's "Electrical Diablerie" written large. The notion that electricity and technology were inherently "civilizing" forces was often asserted and critiqued. In its trade journals, the electrical industry struggled to offer an image of electricity triumphant over darker earthly powers.

Late nineteenth-century technical journals often explored this dualism. Electricity would advance civilization, but it also had immensely destructive potential. Likewise, its fundamental nature, as the journals frequently emphasized, was at best a mystery. William Clerk Maxwell's mathematical explorations of electro-magnetism published in the 1860s and 1870s were not understood or widely accepted until the turn of the century.¹¹⁰ The working engineer might still think of electricity as a "subtle fluid" as in Franklin's time. Electricity was invisible, weightless, flowed instantaneously, animated dissected frog's legs, perked up neurasthenics, and imparted force.

As with gravity, it was better to describe what electricity could do than attempt to explain its nature. Articles titled "What Is Electricity?" would admit that no one, not even the most brilliant scientists, had any idea of its ultimate nature. As a result, even among the technical elite electricity could have a quasi-mystical status. A speaker for the Jovians, an electrical entrepreneurs' trade organization, could claim as late as 1913 that "Electricity occupies the twilight zone between the world of spirit and the world of matter," and then add, "Electricians are all proud of their business. They should be. God is the Great Electrician."¹¹¹

¹¹⁰ Bruce J. Hunt, "Lines of Force, Swirls of Ether." In Bruce Clarke and Linda Dalrymple Henderson, ed., From Energy to Information: Representation in Science and Technology, Art, and Literature (Stanford: Stanford University Press, 2002), forthcoming.

¹¹¹ David Nye, Electrifying America (Cambridge, MIT Press, 1990), 161.

If the trade journals at times supported mystic associations with electricity, they also would criticize the uninitiated who fell for sales scams in which the word electricity was linked to miracles. One writer commented, “There is a tendency on the part of certain people to contemplate it [electricity] as an African does his gree-gree, a wonderful and ineffable something that need only be invoked to produce almost any result that can be named.”¹¹² Such articles would then go on to make fun of a gullible public willing to buy “electric nostrums, electric hair-curlers, electro soap, electric tooth-brushes, electric knife-sharpener and hundreds of others...articles not at all connected in any manner with anything electric.”¹¹³

While pronouncements like those above tended to separate the gullible public from the technically astute readers and members of the electrical industry, they also sought to alleviate their own readers’ fears about the seemingly inhuman forces that they as technicians were ushering into the social realm, the landscape, and the home.¹¹⁴ However mysterious its fundamental nature, electricity was not simply another “gree gree.” It was compatible with progressive desires for a more efficient and scientific culture. And yet it was a mysterious power as great as any known to ancient times and so needed to be tamed. Symbolically, the trade

¹¹² “Electrical Wonder Working,” Electrical World, vol. 26, no. 6, 9 Aug 1890, 81.

¹¹³ “Abuse of the Word Electric,” Electrical Review, 29 August, 1891, 4.

¹¹⁴This theme bases Caroline Marvin's study of electrical journals, When Old Technologies Were New. (New York, Oxford University Press, 1988).

magazines portrayed the taming of electricity by associating it with imagery of women and femininity.

The Vienna Electrical Exhibition of 1883 included an electrical ballet which explored the tension between the "earthly" and "heavenly" aspects of the electrical age. During this ballet "fantastic goblins"—presumably ballerinas—dragged electro-magnets, dynamos, telegraph apparatus and telephones onto the stage. These machines were "handled by the graceful danseuses with as much ease as if they were especially trained in the mysteries of electricity. One of the prettiest scenes is the telegraph polka, which is danced by two ladies in the costume of telegraph boys."¹¹⁵ The goblins of this ballet suggest dark powers wrested from the earth, while the graceful female dancers suggest that same power civilized. As they are one and the same, this staging could imply that electricity had—at the very least—two faces.

A float in a Columbus Day parade in New York City in 1892 also implied such tensions. Called "Electra," this Edison float contained both pagan and Christian iconography. The float, ostensibly a celebration of Columbus's discovery of the New World, instead stressed the triumphant emergence of the brave New World of Electricity. Horses pulled the float, which was lit by batteries powering 3,000 incandescent lightbulbs; at the front of the float were fierce dragons, and in the middle nubile maidens in two-tiered rings, as if part of a

¹¹⁵ "Sparks," The Electrician, Vol. 2, no. 12. December 1883, 389.

wedding cake, looking outward at the crowd. Above them, on the cake's top tier, caryatid statues held up a glowing globe labeled "Electra." On the float, not only women but female angels were shown to harness the power of the ocean and electricity. Towering above the dragons in the front, a female angel held a lit wand, while below her a woman held a large palm frond and a large medallion emblazoned with Edison's portrait. Trumpeting female angels also faced from the back of the float above a grouping of Triton horns, while Roman soldiers marched alongside.

The float was a deliciously mixed metaphor, but suggested that just as Columbus had braved the ocean and dragons to discover America, electricians had tamed the power and demonic potential of electricity. The dragons were tamed and the emperor Edison and his angels were now creating a noble electric world. Similar narratives would be employed fifty years later to persuade the public that atomic energy, though having destructive potential, was ultimately friendly and peaceable.

A panorama at an exhibition in New York in 1896 followed the same theme of electricity's dual nature. Called "Mischievous Brewing," it featured "a witch rather singularly portrayed, young and handsome," bending over a cauldron. Her cat had fiery electric eyes, the red flame of electric lights heated the cauldron and

“at intervals fiery sprites appear and disappear in the background...” The writer mentioned that this exhibit attracted “much attention.”¹¹⁶

In a less-muddled fashion than the float “Electra” or the witch at her cauldron, the image of the Goddess of Electricity suggested how femininity could tame electricity. William J. Hammer lightened the “diablerie” of his dinner party by directing his younger sister May to personify this goddess in a tableau vivant. Dressed in a classical gown, perched on a pedestal, her hair and ears decorated with small electrical lightbulbs, she held an electric wand topped with a glowing star. Hammer’s sister helped depict electricity as innocent and virginal—a harsh contrast to the mad bellowing of the automaton Jupiter—the God of thunder and lightning—at the dinner table.

The electrical journals also suggested that electricity was safe for the domestic sphere by reporting on women’s interest in things electrical. These publications often described with approval refined women who were gaining technological savvy. In so doing the journals yoked electricity to the nineteenth-century cult of domesticity, which insisted that women—even when constricted to the home— had great power as civilizers and enforcers of morality and religiosity. Women could tame electricity. At the same time, the journals suggested that electricity had broadened the domestic sphere. In 1883, a columnist described a mother who held her baby to the telephone so a doctor could listen to

¹¹⁶ “The National Electrical Exhibit,” American Electrician, Vol. 8, no. 1. May 1896, 2.

its cough and declare it was not the “dreaded croup.”¹¹⁷ The woman’s world had been enlarged. Entering that larger world was the duty of the age’s bright, youthful New Woman.

Electrical journals also delighted in reporting on society women who decked themselves in incandescent garb for social events and fund-raisers. Electricians could congratulate themselves for making electrical embellishments status symbols on par with expensive jewelry. According to the industry, women’s interest in electricity, however superficial, suggested a healthy instinct—such interests helped prepare the way for the New Woman who was virtuous yet not constricted to a strictly domestic role. Meldings of women with electricity, however, could also make objects of women: for example, in 1884 the Electric Girl Lighting Company rented out “Electric Girls” as hostesses or servants for parties.¹¹⁸

Not only electrical parties but also electrical weddings became fashionable. Reports on such events implied that electricity was a progressive force that could only add to human happiness. News reports of such weddings also suggested that like love, the electrical age belonged to the youthful, to those prepared for the new. A journal outlined with approval one such courtship. It began when a contributor to the Electrical Review, Miss Gretchen Van Tassel, of an old Knickerbocker family, met Edouard Constant, a member of “one of the

¹¹⁷ “Sparks,” The Electrician, Vol. 2. No 3. March 1883, 83.

most ancient Huguenot families in New Rochelle” and a technically-steeped member of New York’s Board of Electrical Control. Miss Van Tassell was very much a New Woman, enthusiastic, bright, and knowledgeable about electricity and all things modern.

The two lovers met when Miss Van Tassell called Mr. Constant to ask a technical question. After expressing mutual admiration at each other’s publications, he insisted upon visiting her to discuss the technical issue. The description of their meeting is full of puns on electrical activity. For example, Miss Van Tassel’s enthusiasm “was electric,” her eyes “sparkled like a Leyden jar,” her golden hair like the “pale golden light of an Edison lamp.” When they telegraphed and telephoned one another, “Cupid, like a rope-dancer, traveled by wire.” The suitor became a “frequent visitor at the happy electric fireside” of Miss Van Tassell. Ultimately their nuptials were arranged. The wedding scene conjured the dialectical opposite of Hammer’s “Electrical Diablerie.” The bride and bridgroom entered the drawing room “welcomed by a chime of electric bells. Then an automatic electric piano played the wedding march from ‘Lohengrin.’” The bride wore a comb arched with tiny electric lights in her hair. Bouquets of flowers glowed with electric lights. They stood before the minister. “The words were spoken, there was an electric kiss, and the continuous current of their

¹¹⁸ Marvin, 137.

happiness had begun.”¹¹⁹ The electrical wedding was a happy event that God smiled down upon, quite unlike Hammer’s offering of electrical diabolism.

The dualism of electricity as powerful and primitive and as civilized and safe also informed a species of reporting that reminded technicians of the potential dangers of electricity. Electricians wished to prove that their medium was safer than gas lighting systems. Horrors ensued when electricity escaped or existed outside its civilized containment—in accidents involving live wires or lightning. Such articles often offered grisly details to remind readers of the dangers of electricity—particularly in the untamed form of lightning. These pieces suggest that there was no protection from lightning’s wrath. One article from 1883 described the death of a man hit by lightning while reading his Bible and noted that “his clothing was stripped from his back and his flesh lacerated.”¹²⁰ The same journal the next month reported a death from lightning that occurred on a sunny day. Viewers of the corpse saw what looked like “bullet holes” in the man’s breast where the “electric fluid” had entered. Silver coins had fused in his pockets. Neither Bible nor sunshine were proof against death from lightning.

Human-built power sources could also lead to grisly accidents. A journal interviewed a lineman who survived a 500-volt shock. He described the experience in near-mystical terms. He reported that after being knocked off his feet he felt that he was flying, “soaring away, just as one feels when put under the

¹¹⁹ “An Electric Belle,” Electrical Review, Vol. 20, no. 15. 4 June, 1892, 192.

influence of ether or chloroform. Then all was blank.” Upon waking he reported a “strong taste of brimstone in my mouth.”¹²¹ Electricity, like the ecstasy of a shaman’s ceremony, could transport one both to heaven and to hell.

Yet electricity, a protean and plastic force, ultimately would tame nature. Artificial, electrically-run waterfalls figured in many electrical exhibitions—to point to the value of hydro-power but also to provide spectacles of nature tamed. These waterfalls, first replicated carefully, and surrounded with boulders, shrubs and trees, slowly became theatricalized. In 1888 William Hammer designed a miniature Niagara with colored lights and an electric rainbow that could fade in and out of its mists. And at the Buffalo Pan-American Exposition of 1901, a Niagara replica gushed from the base of the neo-classical Electricity Tower, suggesting that Nature was no longer a force apart but one that engineers had assimilated fully into human culture.¹²²

Ideally electricity was a civilizing force for everyone, but many envisioned it as a weapon to be used against what were then thought to be the less civilized. In 1891, when news agencies were reporting the “Ghost Dance” of the Sioux Indians at the Pine Ridge Reservation, one journal reported one crank’s solution for dealing with the Indians. He recommended that the government “Surround hostile camp with wire. The ‘juice’ having been tuned into the wire, lo,

¹²⁰ “Sparks.” The Electrician. Vol. 2, no. 8. August 1883.

¹²¹ Electrical Review. Vol. 19, no.7. 10 October, 1891, 1.

¹²² See Nye, Electrifying America, 29-47, for a discussion of electricity at world’s fairs.

the poor Indian, is to be driven down to it in herds and electrocuted.”¹²³ Though the writer didn’t entirely approve of the plan, his use of the word “herds” indicated entrenched racism. At this same time "ethnic congresses" like those of Barnum underlined racial hierarchies culminating with the Anglo Saxon at the pinnacle.

Electricity could also figure more directly in narratives of Darwinian evolution. In 1892, a scientist with Darwinian interests intended to use electrical devices in his studies of the language and “social life” of the “hut building ape” of the Congo River. R.L. Garner planned an expedition to Africa with a load of electrical devices. Reversing the formula of the zoological park, Garner intended to live in the jungle in a metal cage, electrified for his protection, while he took flash photographs and made recordings of various animals day and night. With his electrical aids, he intended to get views “never before seen by savage or civilized man.”¹²⁴

Mr. Brown’s Crusade

Whether electricity should assist in state executions was a fierce debate of late 1880s America that points to the progressives' difficulty in insisting that

¹²³ “Cranks,” Electrical Review, 17 January, 1891, 251.

¹²⁴ “R.L. Gardner Will Introduce the Telephone and Phonograph Among the Monkeys of the African Forest,” Electrical World, 23 July, 1892, 53.

science and technology were inevitably civilizing forces. The progressive philosophy encouraged the use of science and technology to heighten efficiency, eliminate wastefulness and improve social conditions. Could electricity provide a more painless, humane execution, or would it be a cruel and unusual punishment?

Beneath the debate over electrocutions was a clash between two industrialists: Thomas Edison, who championed direct current, and George Westinghouse, who championed alternating current. Edison, an opponent of capital punishment who had the strong approval of the public and lawmakers, gave support to electrocutions but insisted, to discredit his rival, that they must be conducted with alternating current.

In the 1880s, electrical trade journals first had begun the debate. In 1883, a trade writer suggested electricians were leery of state electrocutions with his remark, “In all probability capital punishment will be abolished before electricity is summoned to the aid of the executioner.”¹²⁵ By the late 1880s, however, New York’s reform-minded legislators passed a bill calling for electric executions. Most electrical professionals doubted that this would be good for their trade. Yet some gave it their blessing. In 1888, one trade journalist expressed his delight: “This method of execution is a tremendous realization of the old notion that Jove struck the guilty with his sudden thunderbolts...”¹²⁶ Here, as so often, the writer finds it necessary to make a reference to the archaic—Jove—to support the new—

¹²⁵ “Execution by Means of Electricity,” The Electrician. Vol 2, no. 4., September, 1883, 283.

electricity. This habit of mind indicates writers found a certain pleasure in the irony, using it to remind readers of how different the “modern” world was from the “ancient” world, but this strategy also suggests an awareness of the haunting of the technological world with old ghosts.

New York's lawmakers' approval of electrical executions stemmed largely from the agitation of one previously obscure electrician, Harold P. Brown. His work in the arc-lighting industry convinced him of the dangers of high voltage alternating current. Brown would have remained obscure if his hatred of alternating current had not prompted him to prove its dangers by executing dogs and other animals in demonstrations before fascinated witnesses. This theater of cruelty gained the interest and covert backing of Thomas Edison, an opponent of capital punishment who reasoned that if state executions used his rival Westinghouse's alternating current, the populace would not want that same hateful "executioner's current" in its home.

Brown, who had invented several devices that alternating current would make obsolete, first gained public attention when he wrote a letter to the editor of the New York Evening Post in the spring of 1888. Brown described alternating current as “damnable” and urged New York, like Chicago before it, to forbid by law the use of high voltage alternating current.¹²⁷ That summer, assisted by a

¹²⁶ “Execution by Electricity,” Electrical World, 21 January, 1888, 25.

¹²⁷ Thomas P. Hughes, “Harold P. Brown and the Executioner's Current,” Business History Review, vol. 32, no. 2. Summer, 1958, 143-165.

member of New York's Medico-Legal Society, Brown demonstrated the dangers of alternating current before an audience at Columbia College's School of Mines. They wired a dog, trapped in a cage, and gave it direct current shocks of 300, then 400, 500, 700, and 1,000 volts. The dog, neither silent nor pleased at such torments, survived. Brown then killed the dog with 330 volts of alternating current. When members of the Electrical Board of Control and representatives of Edison and Westinghouse argued over the meaning of the results, Brown offered to continue the experiments with other dogs. A humane society officer stepped in and forbade any further demonstrations. Brown concluded the night by telling the audience that alternating current was only fit for the "dog pound, the slaughter house, and the State prison."¹²⁸

At the time of this performance, Edison and his corporate interests were locked in battle with George Westinghouse, who then was championing alternating current. Edison preferred direct current. Edison argued, with some validity, that the direct current systems he had devised in New York City were safer, as transmission relied on lower voltages. Likewise, Edison noted that alternating-current lacked metering devices and efficient motors; further, engineering problems in direct current required simpler calculations. However, direct current could only work well in heavily-populated areas as it could not be transmitted more than several miles without losing much of its efficiency. Long

¹²⁸ "Died for Science's Sake, New York Times, 31 July, 1888, 8.

distance transmission would require the great expense of using extraordinarily thick copper wires or pipes. Alternating current, however, could be stepped up to high voltages and transmitted for what would prove to be hundreds of miles at a high efficiency, making it more appropriate for the electrification of rural areas, and also for the development of dynamos at remote hydro-power stations. In his stage demonstrations and pamphlets Brown countered that alternating-current interests were cruel profiteers, concerned far more with profit than public safety.

Although most younger, university-trained electricians believed alternating current would win the day, Edison's opposition and influence were great obstacles. The debate over the currents became intensified in 1887 as a result of Nikola Tesla's work. In 1887 and 1888, Tesla, who had briefly apprenticed with Edison, took out patents for an electric motor, transformers and other devices that could make alternating current power a viable alternative to direct current. Tesla came to prominence when he presented a paper in 1888 to the American Institute of Electrical Engineers that explained the principle behind his alternating current motor and generator.

Tesla's polyphase motor, considered by many to be the most important technological contribution of his career, created a rotating magnetic field by phasing in alternating currents in a circular pattern; the magnetic polarity rotated and could induce a metal bar to follow. Tesla's polyphase motor was an improvement on the earlier direct current motors that changed alternating current

into direct current and required that sparking brushes maintain a contact with a revolving drum. When news of his breakthrough circulated, the popular –and technical—press hailed Tesla as a new “wizard.”

George Westinghouse recognized the importance of Tesla’s concepts, purchased his patents and offered him royalties. The “war of the currents,” formerly something of an academic issue, increased in intensity. Both sides waged this war economically, through propaganda, with threatened or actual acts of industrial espionage, and also with theatrical presentations. Though Brown was never on Edison's payroll, Edison encouraged Brown's macabre theatrical efforts. In July 1888, two months after Tesla had presented his paper on alternating current, Brown electrocuted the dog at Columbia College. With the encouragement of Thomas Edison, Brown went on to execute horses and calves at Edison's new laboratory in West Orange, New Jersey. Impressed New York State legislators voted in favor of adopting electrocution as its new method of capital punishment, and the New York Medico-Legal Society appointed Brown to head arrangements for the first execution. Brown insisted that Auburn State Prison use one of Westinghouse’s generators. He and Edison's publicity team also attempted to make "to Westinghouse" a new verb for electrocution.

Not delighted at the adverse publicity, Westinghouse provided a lawyer for the first proposed victim, William Kemmler, and they appealed the constitutionality of electrocution. When Edison appeared at the hearings, the New

York Times titled its coverage, "Testimony of the Wizard."¹²⁹ Edison testified that electrocution would neither be cruel nor unusual and that an alternating current of 1,000 volts would instantly kill a human. (Most of these debates ignored the fact that electric force is calculated by multiplying voltage, or electric "pressure," with amperage, or "volume" and did not provide values for amps used.) The court ultimately agreed. Kemmler was killed in 1890, and Edison mounted a campaign that asked the public, "Do you want the executioner's current in your home?"¹³⁰

Press coverage of the electrocution of Kemmler and ensuing electrocutions was divided. Many electrical experts mourned the adoption of electricity for executions—especially after grisly press reports appeared of electrocutions that went far from smoothly. Surely the Goddess of Electricity was intended for finer affairs. The Electrical Review ran many articles denouncing the executions, first because they were run by amateurs, and secondly because no real expert would stoop to taking on the role of executioner. One of the Electrical Review's writers commented, "The matter is but an experiment, a horrible experiment, upon human flesh, with no advantages whatever over the old method of hanging...the law was conceived by cranks, has been carried out under the supervision, very largely, of theorists, and these would-be reformers should now

¹²⁹ "Testimony of the Wizard," New York Times, 24 July 1889.

¹³⁰ Thomas P. Hughes, Networks of Power (Baltimore: Johns Hopkins University Press, 1983), 108.

be set to the right-about to employ their little minds upon subjects less revolting to public decency and modern thought.”¹³¹

Gala Nights at the White City

While Edison’s doomed campaign to discredit alternating current continued, Westinghouse and Tesla seized on theatrical tactics to promote their power system’s safe and miraculous nature. Their efforts culminated in the spectacular success of the 1893 World’s Columbian Exposition in Chicago, which Westinghouse’s electrical system powered. Tesla as showman also proved himself a formidable proponent of alternating current. He first stepped onto the stage to defend alternating current when he lectured about light and high-frequency phenomena for the American Institute of Electrical Engineers in May 1891 at Columbia College. Here, Harold Brown had also debuted several years earlier.

At the lecture, Tesla unveiled a generator attached to an induction coil (or “Tesla coil”) that together could create frequencies of 20,000 alternations per second and voltages as high as 250,000 to 1,000,000. This apparatus created an electrical field that charged the room. Tesla displayed the potential value of such arrangements. He ran devices that were not wired to outlets or power sources. He held up empty glass tubes and bulbs and they gave off a bright light. Geissler

¹³¹ Electrical Review, 20 February, 1892, 354.

tubes filled with gases lit up brilliantly in different colors. A reporter from the Electrical Review insisted, “Here Mr. Tesla seemed to act the part of a veritable magician.”¹³²

During the lecture, Tesla also offered dramatic proof of the safety of alternating current—at least at high frequencies. He let currents as high as 250,000 volts pass into his own body so that sparks shot from his fingertips and his entire body glowed with violet electrical flames. Here was dramatic proof that alternating current need not be thought of as the executioner’s current. The Electrical Review’s reporter insisted that while Tesla offered “a brilliant exhibition of fireworks,” the performance also revealed that “a distinct advance had been made in scientific research.”¹³³ During this and ensuing lectures, Tesla discussed the possibility of using such electrical fields for lighting systems, for remote control of devices, for medical therapy, and for the wireless transmission of universal time, information, and electrical power.

Tesla repeated his performances for scientific and technical societies. In February of the following year, 1892, Tesla went to London's Royal Society to lecture on “Experiments with Alternate Currents of High Potential and Frequency.” The next night he duplicated the talk at the Royal Institution before an audience of eight hundred. The English scientist Lord Rayleigh thanked him, noting, “Mr. Tesla has taken us into some of the dark—metaphorically dark—

¹³² “Alternating Currents of High Frequency,” Electrical Review, 30 May, 1891, 185.

places in nature. These fields have been little trodden...it does not require any great capacity to see that Mr. Tesla has the genius of a discoverer.”¹³⁴

Tesla's theatrics and apparatus made a great impression on the British scientists. An electrical journal reports how these scientists duplicated and explored Tesla's effects at a Royal Society conversazione later that year. At the salon, J.T. Bottomley exhibited discharges “a la Tesla” from vacuum tubes in one room. In another “Professor Crookes played with a vibratory current of 100,000 volts pressure and a million alternations per second, and offered his audience shocks from the apparatus free.” A journalist commented that Crookes—one of the era's pre-eminent scientists—created “phosphorescent effects” of great beauty.¹³⁵

These lectures of the 1890s made Tesla a celebrity. When he lectured in St. Louis at the National Electric Light Association Convention, 4,000 copies of the biography of Tesla inserted in the program were sold on the streets. Several thousand people came to hear his lecture that night at the Grand Music Entertainment Hall in St. Louis, paying four to five dollars for the ticket.¹³⁶ Audience members were fascinated with Tesla's light effects, particularly when he touched a high voltage electrode and his body burst into flames and, reportedly, continued to glow long after the demonstration. He seemed no ordinary man. The

¹³³ Ibid.

¹³⁴ “Tesla at Royal Institution,” Electrical Review (London), 12 February, 1892, 192.

¹³⁵ “Brilliant Experiments,” Electrical Review, 4 June, 1892, 193.

New York Sun, the first newspaper to dub Edison a "wizard," soon after ran a front-page illustration of Tesla, his body glowing with light, with the caption, "Nikola Tesla, Showing the Inventor in the Effulgent Glory of Myriad Tongues of Electric Flame After He Has Saturated Himself with Electricity."¹³⁷ The "New Wizard of the West," as Pearson's magazine¹³⁸ called him, had arrived.

Public approval of alternating current reached its apotheosis at the World's Columbian Exposition in Chicago in 1893. Outmaneuvering his rivals, Westinghouse gained the contract to install the fair's electrical system. The wonders that the fair's designers wrought with electricity decided the outcome of the battle of the currents. Never before had technology created such an impressive spectacle. The Columbian Exposition with its floodlit white Beaux Arts buildings suggested an amazing advance for mankind. If the buildings were still classical in design, embodying timeless virtues, electricity brilliantly lit the fairgrounds, electric searchlights plied the heavens, incandescent bulbs created a halo around the Ferris wheel, and, with the aid of engineers such as William Hammer, colored lights turned fountains into dazzling displays then known as "electrical fountains."

At the Westinghouse exhibit in the Palace of Electricity, Tesla gave lectures, presented his "Egg of Columbus," which spun and then stood on end as it responded to a polyphase current like that of his induction motor, and the

¹³⁶ "Nikola Tesla and His Wonderful Discoveries," Electrical World, Vol 21, no. 17. 29 April, 1893, 323.

¹³⁷ New York Sun, July 22, 1894, p.1.

inventor doused himself with electricity in huge voltages to champion the safety of alternating current. Tesla designed a small electric sign for his exhibition that proclaimed the name Westinghouse in glass, periodically doused with high potential discharges that created a miniature display of lightning and the deafening crash of thunder. Its noise could be heard throughout the Electricity Building.¹³⁹

In the building, exhibitors displayed thousands of devices, such as an automatic electric door, a diver's suit equipped with a telephone, and an array of Edison phonographs which could be used for business dictation or language study, and others equipped with nickel slots that would play music. Elsewhere, the businessman was offered a seven-day clock in which pins could be placed at any day, hour, or minute to ring alarms and remind him of an upcoming appointment. Visitors also eagerly toured the fair's powerhouse where forty steam engines ran over a hundred dynamos. Such displays made a convincing argument for the utopian future electricity would soon bring.

Most impressive of all were the displays of illumination. Inside the Western Electric exhibit was a small "Scenic Theater" that seated an audience of 175. The show in this "salmon tinted" theatre, operated by one man, became the big hit of the Electricity building. The lights would dim and the audience would

¹³⁸ "The New Wizard of the West," Pearson's Magazine, May, 1899, 470-76.

¹³⁹ John P. Barrett, Electricity at the World's Columbian Exposition (Chicago: R.R. Donnelly & Sons, 1894), 168.

see a small Swiss village, with houses, a stone bridge above a working waterfall, and a castle before foothills and snowy mountains. Lighting displays would show the light shifting over this landscape from dusk to deep night, when the lights inside huts and the electric streetlights were extinguished. After the night sequence came the red glow of sunrise, with pink then gold light hitting the mountains and then sun bursting with white light over the entire scene. A procession of small puppet figures, led by a military band followed by cavalry, marched across the bridge to the castle. Soon after the sun progressed to mid-day, the skies clouded and there was a thunderstorm. Peasants with umbrellas crossed the bridge. After sunset, stars slowly appeared in the skies and the curtain descended.¹⁴⁰ This pastoral scene helped reassure audiences that electrification would not necessarily entail vast social changes, but merely an enhancement of all that was already best in daily life; the theater also provided a refuge from the Electricity building's conceivably jarring displays.

On a grander scale, the entire fairgrounds also served as a theater for a nightly illumination ceremony. On “gala nights” crowds gathered at twilight to watch fireworks over Lake Michigan, the electric fountains foaming with colored lights, and burning torches above the fairground’s otherwise dark buildings. Then, “once the last rocket has been shot into the sky and the last string of flambeaux

¹⁴⁰ Barrett, 13-14.

has collapsed into darkness,”¹⁴¹ electrical illumination began transforming the buildings, canals and concourses into the “White City” of its popular nickname.

In 1894, John P. Barrett, who published a technical account of the fair’s electrical displays, insisted that the fair offered electricians a chance to catch up with advances in their field, but also had created a stunning promotion. “[I]t dissolved much of the mystery that had pervaded its domain; it brought electricity to the people in the light of a servant not as an awful master; and finally it created an impression of stability and soundness among the thinking and progressive element of the people that will mean wider commercial development...”¹⁴²

The issue of electricity acting as “servant” or “awful master” also inflected the rhetoric of President Grover Cleveland at the fair’s inauguration. As Cleveland tapped a gold telegraph key to start the electrical dynamos and machinery, he proclaimed, “As by a touch the machinery that gives life to the vast Exposition is set in motion, so at the same instant let our hopes and aspirations awaken forces which in all time to come shall influence the welfare, dignity and freedom of mankind.”¹⁴³ The remark reflected the progressive notion that the country must harness knowledge and technology for the goal of social betterment. It also connected electricity—the new form of power that flooded the exposition—to the life force and to larger realms whether political, geographical

¹⁴¹ Photographs of the World’s Fair, (Chicago: Werner Company, 1894), 25.

¹⁴² Barrett, xi.

¹⁴³ “Opening of the World’s Fair,” Electrical World, Vol. 21, no. 12, 13 May 1893, p. 364.

or historical. Electricity was coming of age, the United States was a world power, and even a business-minded president could imagine the nation's—and Nature's—new powers misused.

Electricity's dual nature, however, was barely expressed at the Columbian Exposition. Unlike the float "Electra" from the year before that had connected the advent of electricity to Columbus's discovery of America, this world's fair celebration of Columbus had no obvious dragons to tame. The foils for "modernity" instead were the ancient models used in the Beaux Arts architecture and the "exotic" cultures on display in the different national villages of the midway. One stunned visitor, Henry Adams, eventually came to the conclusion that the dynamos themselves were the dragons. In his autobiography, The Education of Henry Adams, he remarked that the Columbian Exposition for him had been a rude awakening. Its technological wonders forced all thinking men to "sit down on the steps and brood as they had never brooded on the benches of Harvard College, either as student or professor."¹⁴⁴ Adams was again drawn to the dynamos at the Paris Exposition of 1900 and, after lengthy brooding, was prepared to answer that which "Chicago asked in 1893 for the first time...whether the American people knew where they were driving."¹⁴⁵ His conclusion was that technology was spinning culture into a meaningless future and that his countrymen were slavishly worshipping the machine.

¹⁴⁴ Henry Adams, The Education of Henry Adams, (New York: Modern Library, 1931), 342.

In his famous chapter “The Dynamo and the Virgin,” Adams contrasted the religious power that once emanated from female deities such as Venus and the Virgin Mary to the power that emanated from the dynamo. Unaware of the electrical industry’s attempt to fuse the two in the image of “The Goddess of Electricity”—and even if he had chanced upon her in an electrical journal, Adams would likely have been unimpressed—Adams chose to posit fervor for the old religion and new as complete opposites. “All the steam in the world could not, like the Virgin, build Chartres.”¹⁴⁶ The Progressive assumption that science and technology could lead to a rational, well-regulated society seemed unlikely. He feared that modernity was ushering in chaos—the splintering of social values and unity. For underneath the new age was not the spirit of rationality, but a new form of worship and awe. For Adams, the dynamo was the modern era's golden calf.

Thomas Edison Conquers Mars

The electrical inventors who had brought forth Adams’s feared dynamo were objects of public fascination. Although the image of Edison did not easily fit the paradigm of a wizard or mad scientist, Nikola Tesla was ready-made for these roles. Edison, sloppily-dressed, amiable, folksy, ruthless, able to get along better with America's pragmatic businessmen than with uppity men of science, managed

¹⁴⁵ Ibid., 343.

to remain a folk hero whose products and industries, not persona, represented the new age. In contrast, Tesla spoke with a European accent, was tall, dandified, erudite, celibate, and given to high-flown poetic speeches about the importance of his inventions. He embodied many of the contradictions that Adams read into world's fairs. Tesla's displays in which he soaked up voltage and emitted electric flames suggested that he was a hyper-modern man. He reflected the Progressive creed in many of his endeavors, but publicity surrounding him frequently linked him to more archaic, archetypal roles, as those of the ascetic saint, the wizard, the seer, and his tragic finale as the mad scientist.

Edison had rehearsed for the role of mad scientist with limited success. In 1890 he began a collaboration with George Lathrop to co-author a futuristic book similar to Looking Backward. Edison wrote thirty-three pages of notes that offered descriptions of anti-gravity devices and suspended animation machines for space travel, descriptions of a lost world at the Arctic pole, and numerous ways that people of the future might redesign the earth's topography.¹⁴⁷ After his initial enthusiasm waned, Edison dropped the book project. He then permitted Garrett P. Serviss to write and serialize "Edison Conquers Mars" for Hearst's New York Journal in 1899.

Though Edison's image was that of a pragmatic man of the people, he cultivated eccentric strains of thought. Edison signed on with the Theosophical

¹⁴⁶ Ibid., 388.

Society shortly after it was launched in 1875. He also speculated that each of the atoms in our bodies might have a kind of intelligence that could be decoded. Edison toyed with the idea that man "was a multiplicity" to argue first against, then later in favor of, the possible immortality of the soul. Likewise, he could make joking references to the demonstration of a new device as a "séance."¹⁴⁸ Particularly in his old age, Edison was willing to speculate on metaphysical matters in his homespun manner. But Edison was far more comfortable planning ways to extract metals from ores, improve telegraph recording devices, develop an electric automobile, and otherwise serve industry and increase his fortune. Edison presented himself as a Yankee tinkerer, like Twain's Hank Morgan, who had no otherworldly pretensions.

In contrast, mystic-minded writers have often tried to claim Tesla as one of their own. Tesla's own anecdotes about his early life gave cues to biographers seeking to describe him as a superman—as did his first biographer, John J. O'Neill—or as a saint or an odd amalgam of mystic and scientist. Tesla outdid men like Charles Came and others who ran electrical wonder shows in promoting himself as a miracle worker.

Tesla's statements about his early life imply he periodically underwent tremendous ordeals that would neatly fit the life story of a tribal holy man. Such life stories, which revolve around a conversion experience—whether in a

¹⁴⁷ Paul Israel, Edison: A Life of Invention (New York: John Wiley and Sons, 1998), 365-68.

Christian or pagan context—tend to show the subject tormented by the forces of hell before being lifted to the heavens. A man of science with an intense spiritual life would appeal to many at the turn of the twentieth century. Tesla's life story, as told by himself and his disciples, focused on his initiation into the cult of the electricians, his agony and ecstasies, and his eventual fall from grace as an electrical wonder worker. In later generations, fanatic worshippers would add tales of his posthumous ascension to a higher plane or orbiting spaceship.

Such a rendering suggests the public's desire that religion somehow mesh with the scientific currents of the age. William James wrote Varieties of Religious Experience in 1902, at a time when Henry Adams and many other Americans were full of doubts about the cold materialism then prevailing. James filled the book with historical narratives of conversion experiences. To give just one example, he described a simple farmer who came upon an evangelical camp meeting with its “terrible noise” of those seeking conversions. The man declared that “I fell on my face by a bench, and tried to pray, and every time I would call on God, something like a man’s hand would strangle me by choking.” The man continued to struggle with this invisible hand, then heard a voice that warned him, “Venture on the atonement, for you will die anyway if you don’t.” Ultimately he

¹⁴⁸ Israel, 118.

was revived and felt himself flooded with light and glory for several days.

Everything was new. In short, he had experienced a death and rebirth.¹⁴⁹

Anthropological descriptions of the initiation of tribal shamans—holy men or sorcerers—follow an outline similar to this version of an evangelical conversion experience, yet they tend to be more elaborate. First, the candidate often has a tenuous outsider status in the tribe. Social ostracism is common for the eventual shaman. Secondly, though repeatedly called by “terrible” voices, he or she may try to refuse these invitations of the spirits. Usually the candidate will fall deathly ill, particularly after refusing the call. This illness will bring the candidate to the brink of death. The shaman, like the camp meeting attendee, has to “venture on the atonement” for the shaman “will die anyway” if he or she does not.

The shaman’s initiation experience as described in anthropological literature tends to be more complex than the camp meeting convert’s. Such candidates do not just feel a choking hand on their neck, but they also wander through a realm of spirits, learning secrets; eventually monstrous beings attack them and tear them to bits. After this death, the candidates are revived, their new body reshaped and healed by spirit helpers. After this rebirth, they recover their health, and can call on helping spirits to aid them when curing the sick, or when searching out new cures in nature. When performing a healing ceremony, the shamans perform great miracles that metaphorically or literally replay a narrative

¹⁴⁹ William James, *The Varieties of Religious Experience* (New York: Modern Library, 1929),

of death and resurrection, and prove them able to handle escape bonds, endure cuts, or other destructive forces without injury.¹⁵⁰

For Tesla the would-be shaman of science, as for Henry Adams, science and engineering were a new form of religion. Tesla and his followers cast his life story in a manner that made him fit the dual role of scientist and primitive holy man. Tesla's autobiographical writings show him undergoing an illness and conversion before arriving at his scientific vocation and another illness before his first great discovery. Tesla was born in what is now Croatia; his father was an orthodox priest. When Tesla was five, his older brother, the family favorite, died in a riding accident. After the accident Tesla recalled constantly trying to please and impress his disinterested parents. Tesla as a child was considered somewhat peculiar and had few friends in the village where he grew up. Throughout his childhood and youth his father steered him towards the clergy, but Tesla continually desired to be an engineer. At age eighteen, Tesla fell deathly ill with cholera. Tesla claimed that, visiting his bedside, his father asked him if he would get well, and Tesla had responded, "I will get well if you will let me study engineering." His father agreed. Tesla spent a year in the mountains, regaining his

245.

¹⁵⁰ See Mircea Eliade, *Shamanism: Archaic Techniques of Ecstasy* (New York: Pantheon Books, 1964). Eliade argues that shamanism has much in common with fakirism, and such feats help the shaman establish the "genuine" nature of his or her escape from the "profane condition," 228.

strength and avoiding compulsory military service, and soon after began his education at technical schools elsewhere in Europe.¹⁵¹

As the above anecdote suggests, Tesla's autobiographies and biographies tend to show him undergoing a crisis before arriving at his scientific vocation. As is typical of tribal candidates to be shamans, he was an outcast as a child—someone who seemed abnormal and disturbing to others. He also admitted to peculiar psychic gifts. He had the ability, for example, of sharply visualizing scenes, people and things, making it difficult to separate these images from reality. He later credited many of his inventions to this visualization ability, insisting that he had no need of models, drawings, or experiments. “When I got an idea, I started right away to build it up in my mind. I changed the structure, I made improvements, I experimented, and I ran the device in my mind”;¹⁵² he insisted he would even work out the correct dimensions of parts in his mind, adding, “It is immaterial to me whether I run my machine in my mind or test it in my shop.”¹⁵³

New and disturbing abilities appeared after his father's death, while Tesla was beginning his career. In his student days, while searching desperately for the method to create a more efficient alternating current motor, Tesla fell ill with an unknown syndrome. Such mysterious maladies are crucial to shamans' tales—

¹⁵¹ “Nikola Tesla Receives Edison Medal,” Electrical Review and Western Electrician, 26 May, 1917, 881.

¹⁵² *Ibid.*

prior to initiation most shamans fall ill and appear on the point of death before making their journey into the world of spirits. Tesla described his own peculiar syndrome as follows: his heart raced to as high as two hundred and fifty beats a minute, he twitched and trembled, and his senses became enhanced so that the sound of a fly landing nearby or a clock ticking in another room caused him agony, the force of the sun's rays would stun him, and "in the dark I had the sense of a bat and could detect the presence of an object...by a peculiar creepy sensation on the forehead."¹⁵⁴ Physicians believed he was not long for the world.

As in the tale of a shaman or a saint, relief from these otherworldly symptoms came with a vision. According to Tesla, the vision appeared to him while he was walking in a park in Budapest and watching a sunset with a friend. He began to quote lines from Goethe's Faust about the setting sun, and perhaps incited by the image of the sun's daily revolution, Tesla solved the problem of the induction motor. He saw the principle of the rotating magnetic field, induced by staggered circuits arranged in a circular pattern. According to the legend, he drew a sketch of the device's workings in the dust for his friend—a sketch similar to his eventual patent drawings.

Following this great vision, Tesla continued on the road to becoming a great wizard. After his initiation, he apprenticed with another "wizard"—in this

¹⁵³ Nikola Tesla, "Making Your Imagination Work For You," American Magazine, April, 1921, 62.

¹⁵⁴ Tesla, and Ben Johnston, editor, My Inventions: The Autobiography of Nikola Tesla (Williston, Vermont: Hart Brothers, 1982), 59-60.

case Edison, for whose concerns he worked both in Europe and later in New York City. Although he had a falling out with Edison, he later described Edison as an “extraordinary” man. According to their biographers, both were tireless workers who could put in twenty-hour work days for months at a time. There are also anecdotes that suggest that Tesla wished to model himself after Edison. One such anecdote has Tesla asking the more-established inventor what his breakfasts consisted of and Edison replying “welsh rarebit.” Tesla dutifully ate welsh rarebit every morning for some time before realizing he was being kidded.

The apprenticeship concluded with a dispute over \$50,000 that Tesla claimed Edison had promised but never paid for improvements Tesla had introduced to his power plants. Finally, after the break with Edison, and after becoming a master inventor himself, Tesla put on displays to reveal his otherworldly abilities. These displays of the shaman generally recapitulated the initiation story in which the shaman dies and is resurrected. Tesla, on stage, subjecting himself to a million volts of alternating current and then bursting into flames, created a spectacle that undoubtedly outdid those of most tribal shamans. And Tesla certainly believed in the healing power of electricity, particularly high frequency electricity, and doused himself daily as part of a health regimen.

Admiring biographers and popular press articles furthered the “Tesla as shaman” or “Tesla as wizard” formula. In an 1899 article, a journalist described his visit to Tesla’s Manhattan laboratory. The Pearson's writer reported, “A tall,

thin young man walks up to you, and by merely snapping his fingers creates instantaneously a ball of leaping red flame, and holds it calmly in his hands. As you gaze you are surprised to see it does not burn his fingers. He lets it fall upon his clothing, on his hair, into your lap, and finally, puts the ball of flames into a wooden box.”¹⁵⁵ The handling of fire is common to a shaman’s shows. Tesla would also play a variant on the “death and resurrection” motif of the shaman’s voyage for laboratory visitors—possibly picking up a few tips from the performances of Harold Brown. Tesla would remove a small animal from a cage, kill it with one thousand volts of electricity, then let his audience view the meter as he allowed two million volts to pour through his own body.¹⁵⁶

Though Tesla encouraged the public to think of him as a great wizard, he paradoxically also denied any interest in the occult and ultimately promoted an extremely materialistic worldview. Tesla attended at least one of the charismatic Swami Vivekenanda's lectures in Brooklyn in the 1890s, and became interested in Vedic teachings; he occasionally alluded to this philosophy in his letters but avoided the psychic research tendencies of many of his peers—particularly in the British scientific community. Tesla greatly admired the scientists Oliver Lodge and William Crookes but refused to share their enthusiasm for psychic investigations. He gently satirized those who believed in telepathy, premonitions,

¹⁵⁵ Chauncey Montgomery McGovern, “The New Wizard of the West,” Pearson’s Magazine, May, 1899, 470.

¹⁵⁶ *Ibid.*, 471.

communication with spirits or other psychic phenomena. An interview in the New York World from 1894 flatly declared that “he does not believe in telepathy, which is, according to its exponents, a sort of psychical electricity.”¹⁵⁷

In a bitter letter to the Westinghouse Company in 1899, Tesla poked fun at Crookes’s then somewhat notorious advocacy of the reality of telepathy. The letter included a check from Tesla to pay for equipment he had borrowed for experiments. Tesla wrote of recalling a dream in which he was sent a check for \$50,000 from the Westinghouse Company to thank him for his past efforts on their behalf. Having instead received a demand for payment, Tesla thanked them for confirming his belief that Crookes was mistaken and there were “no transmissions of mind efforts.”¹⁵⁸

Tesla combined his interests in utopian technology with an aggressively materialistic worldview. As such, he was a prototypical Progressive. His clearest expression of these aims are in his article, "The Problem of Increasing Human Energy," which ran in 1900 in Century magazine. It reads at times like a lampoon of a technical thinker approaching social problems—similar to later efforts of Buckminster Fuller—as when he states throughout that his goal is determining how to increase the "force" operating in the "human mass" in order to ensure progress. Tesla even gave a variant of the physics formula for momentum to

¹⁵⁷ New York World, 22 July, 1894, 1.

¹⁵⁸ Tesla to Westinghouse Electric and Manufacturing Company. 24 February, 1899. Swezey Papers, NMAH.

indicate the total amount of human energy, indicating it was equal to MV^2 , with M as the total "human mass" and V as a hypothetical velocity, equivalent to "F-R, or force minus resistance."¹⁵⁹ Progress could be made by: (1) increasing the human mass (or M); (2) reducing "retarding" or "frictional" forces (or R) on velocity, primarily by ending ignorance, fanaticism, and warfare and realizing peace; and (3) increasing the "accelerating" force (V) by more efficiently harnessing the power of the sun for work.

His solution to these difficult problems reads as a prospectus for his various planned inventions. He believed the "human mass" could be increased with better food sources and improved health and hygiene, and proposed using an electrical method for fixing atmospheric nitrogen to fertilize soil. Warfare was also a wasteful practice that decreased human mass. The "frictional" force of warfare could be ended with his research into self-guided ships and other robotic war machines that he thought would make human soldiers obsolete, or convince humanity of the futility of warfare. The acceleration of the human mass could be increased by more efficiently harnessing the sun's power, with renewable energy sources like wind, water and sun, transmission with wireless power, and "self acting engines" or perpetual motion machines, or virtually free power sources which might usher in a utopian age.

¹⁵⁹ Nikola Tesla, "The Problem of Increasing Human Energy," Century Magazine, June, 1902, 175-78.

Tesla's ultimate goal sounded identical to that of Edward Bellamy, the author of the influential utopian novel Looking Backward (1888). Bellamy saw progress occurring when all the competing monopolies finally became one great monopoly—a world corporate nation—its people through the ballot creating a sane, efficient society, creating physical comforts and the leisure for higher pursuits. In Tesla's version, the utopian society would appear "When all darkness shall be dissipated by the light of science, when all nations shall be merged into one, and patriotism shall be identical with religion, where there shall be one language, one country, one end, then the dream will have become reality."¹⁶⁰

Just as many Progressives longed to take on the monopolies of the age, Tesla expressed no loyalty to Westinghouse, General Electric, or other companies profiting in the energy trade. In the Century article he insisted that gaining energy by consuming material was irrational and inefficient and instead explored the alternatives of wind power, water power, and solar power. He had some hopes of creating the equivalent of a perpetual motion machine, or a heat engine, which relied on intensified sun's rays to heat water and run an engine. As with his successful effort to create the polyphase motor, he was spurred by hearing others—in this case Lord Kelvin and Carnot—say it was impossible for a machine "to cool a portion of the medium below the temperature of the surrounding and

¹⁶⁰ Ibid., 188-89.

operate by the heat abstracted."¹⁶¹ Since, in Tesla's eyes, man was a "self-acting engine" that could do this, that is, reverse entropy, he suspected there might be a way to get around the laws of thermodynamics.

Tesla's happy vision of man as a machine is a chief component of his article. The supernatural and superstition had to be swept out of the path of progress. When describing his development of a radio-guided boat, or his "teleautomaton," which he demonstrated at Madison Square Garden in 1898, he insisted the design had been based on his observations of his own behavior. In envisioning the future field of robotics, he outlined a philosophy similar to that of the behaviorists, insisting that "I remember only one or two cases in all my life in which I was unable to locate the first impression which prompted a movement or a thought, or even a dream."¹⁶² According to this formulation, Tesla himself was an automaton, endowed with the power of movement, and able to react to external stimuli.

Tesla justified his interest in "teleautomatons" with the blithe assurance that since men were essentially machines, if machines could be devised that were essentially men, they could wage war on each other for us, and gradually the human race would be weaned from its aggressive nature. This robotic view of individual consciousness was quite opposed to the romantic sensibility that he also exuded. A solution to this paradox may be simple. For Tesla, if not for

¹⁶¹ Ibid., 201.

Crookes or Lodge, science and the supernatural were impossible bedmates. Tesla often eagerly remarked that it was only through severe discipline that he had learned to curtail his abilities to imagine distant landscapes and cities, or receive premonitions, as if he had corrected himself of outmoded romantic manners of thinking to recreate himself as hypermodern. With this in mind he also was able to explain to himself his own strange visualization abilities. His hopes for improving mankind were similar to those that behavioral psychologist B.F. Skinner was later to elaborate in Walden Two—people could be conditioned to coexist and create a productive, peaceful society.

Tesla's solutions to "The Problem of Increasing Human Energy" involved ambitious schemes that could test the boundaries of technology's destructive and productive potentials. His main hope, after helping Westinghouse create an alternating-current power system, was in creating an even more advanced system of power distribution that would require no transmission lines and might be virtually free of cost. He spent \$150,000 of J.P. Morgan's funds creating a laboratory tower on Long Island that was to be the first link in his "World System" of communication and wireless power distribution. He imagined being able to use the entire earth as a large condenser that would induct energy to different towers. Homes and factories with antennas might then pick up the power they emitted to run machinery. He later envisioned airplanes powered by similar

¹⁶² Ibid, 184.

signals. Morgan, however, lost interest in Tesla's costly scheme after Marconi succeeded in his more modest experiment of broadcasting telegraph signals across the Atlantic. Despite Tesla's frantic efforts through the decades to raise money to power up the station, it was eventually torn down.

When Tesla's great ambition to build his "World System" of wireless power distribution failed, and Marconi captured the public's imagination as the inventor of radio, Tesla's reputation was eclipsed. His standing in the scientific community also plummeted when he began to make wild predictions in the press for his plans to tap cosmic rays, communicate with other planets, create perpetual motion machines, change weather patterns, devise an early prototype of a "Star Wars" defense system against rocket and airplane attack, and develop other devices of destruction. One such device was a mechanical oscillator that would set up standing vibrations that could destroy structures and ultimately even split open the earth. His grandiosity and propensity for imagining destructive devices helped a new portrait emerge of Tesla as mad scientist.

Tesla's devotion to his world system and the messianic hopes he had placed in it began to alienate his peers, many of whom assumed he was mentally deranged. An image of the ostracized Tesla as mad scientist grew in the early twentieth century. Tesla, whose sparking, discharging "coils" helped create the visuals for the screen version of "Frankenstein," offered a newer prototype of the mad scientist than that which had haunted the nineteenth century. In contrast to

medical tinkerers like Victor Frankenstein, or H.G. Wells's mad vivisectionist Dr. Moreau, or the insane, vampire-like mesmerists of scare tales, Tesla's post-world system interests made him an early model for the mad scientist as physicist, a controller of "death beams," "disintegrating rays," and other manifestations of energy that became popular in the pages of Hugo Gernsback's magazines of the early twentieth century—magazines that also featured profiles of Tesla and his accomplishments. A 1941 Superman comic book, "The Mad Scientist," featured Tesla in the title role.¹⁶³

In the meantime, Tesla's rivals were stealing the eclipsed wizard's thunder. Marconi, for example, in 1912, gave a Tesla-esque interview that resulted in an article titled "Marconi's Plan for the World." Referred to as a "wizard," Marconi talked up Tesla's favorite ideas as his own: the use of wireless power to light cities, the possibility of contacting other planets with radio, and the use of electricity to fertilize soil. Marconi concluded his new innovations would have vast political ramifications. "It will be necessary to sweep out all the present privileged corporations of power...In the future the government will be the owner of all energy. Individuals will use it to a certain amount free of any charge..."¹⁶⁴

For his many eccentricities, haughty ways, and refusal to become part of the corporate structure of technological research, Tesla's peers began to write him

¹⁶³ David H. Childress and Nikola Tesla, The Fantastic Inventions of Nikola Tesla (Stella, Illinois: Adventures Unlimited, 1993), 247.

¹⁶⁴ "Marconi's Plan for the World," Technical World Magazine, October, 1912, 150.

out of the story of electrical development. As late as 1956, an engineer who had known Tesla in the early days remarked that after Tesla's laboratory in Manhattan burned down in 1895, "he was getting odd. His ideas had become very visiinary [sic.] at that time and I regarded him as rather unbalanced mentally....I do not think his mind was ever perfcetly [sic.] balanced and that is why I ceased seeing much of him. I was afraid of his going crazy at any time. Fortintely [sic.] this did not take place and he only becmae [sic.] very queer and impossible....In other words he was a crank genius."¹⁶⁵

In Pursuit of 'Entity X'

Even in the years of Edison's waning creativity and Tesla's long fall from grace, the American public had not tired of the metaphor of "scientist as magician." The next electrical worker in line for canonization was Charles Proteus Steinmetz. In 1888, a youthful Steinmetz had left his technical studies and fled Germany to Zurich to avoid possible imprisonment for his involvement with a utopian socialist group. He emigrated to the United States in 1889, the year after Tesla had presented his paper on the polyphase motor to the engineering community. Steinmetz eventually became employed by General Electric in 1892.

¹⁶⁵ Edward R. Hewitt to Kenneth Swezey, 9 May, 1956. Swezey Papers, NMAH.

Steinmetz made his name as a theoretician able to bridge the academic world of science and the grittier craft industry of electrical engineering. One of his first assignments at G.E. was to find ways to work around Westinghouse's Tesla patents on alternating current.¹⁶⁶ Such a start in his career ensured his later tendency to deny Tesla's importance to the history of electricity. Steinmetz was the first to codify the mathematical theory of Tesla's polyphase engine. He also worked on the mathematics of the magnetic interference of inductance in transmission and hysteresis in transformers and generators. Two of his written works, Theory and Calculation of Alternating Current Phenomena (1897) and Theoretical Elements of Electrical Engineering (1900), thoroughly developed the theory of alternating current for engineering use. By 1902 Steinmetz had been elected president of the American Institute of Electrical Engineers.

Steinmetz's prominence in the engineering field was genuine, but G.E.'s publicity department helped engineer his eventual fame as a "wizard." Steinmetz was a genial man whose humanity and clear-thinking shone out in the popular writings he indulged in during the 1910s and 1920s. His prominence, despite his physical handicap as a hunchback, made him a fascinating human interest story. His personal lifestyle was full of charming eccentricities, his socialist yet pro-corporate views made him a curiosity, and he was articulate and spontaneous in interviews making him, along with Edison, a favorite of the press. Further, G.E.

¹⁶⁶ Ronald R. Kline, Steinmetz Engineer and Socialist (Baltimore: Johns Hopkins Press, 1992),

pressed him forward, as his biographer Ronald Kline has argued, to create a genial face for a corporation facing ongoing anti-trust litigation.

Most importantly, Steinmetz could not be accused of being a crank. If anything, he was too conservative in his engineering views to please his cohorts at G.E. He was the anti-Tesla. He first rose to prominence about the same time that Tesla's world system crumbled after Marconi's successes with radio. Steinmetz was profiled for Success Magazine in 1903. A 1904 article in World's Work outlined a rags to riches scenario in its subtitle, "His Rapid Advance from Poor German Student to an American Industrial Leader..[and]One of the Greatest Inventors in the World."¹⁶⁷ Many other such stories followed. In 1911, a New York Times reporter listed Steinmetz's attributes as follows: "He is not one of the limelight prophets; he makes no dazzling predictions; he announces not startling inventions to be brought forth on a morrow which never comes. He is of that other variety of scientist, the kind that do things."¹⁶⁸ In the ensuing interview, Steinmetz showed little sympathy for Tesla's predictions of wireless power transmission or electrical weaponry, labeling them "trash." Throughout the late 1910s and early 1920s, Steinmetz was profiled frequently, and he also contributed articles to popular magazines defending a mixture of socialism with corporate America, describing utopian futures with virtually free hydro-electric power, four-hour

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¹⁶⁷ Arthur Goodrich, "Charles P. Steinmetz, Electrician," World's Work, June 1904, 4867-69.

¹⁶⁸ "Noted Expert, Dr. C.P. Steinmetz, Talks of the Future Wonders of Scientific Discovery and Ridicules Many Prophecies," New York Times, 12 November, 1911, IV, 4.

workdays, smokeless cities, and electric automobiles in every basement. He also insisted that science and religion could be compatible. Compared to the wilder effusions of Edison and Tesla, Steinmetz's pronouncements were quite tepid.

Yet, like Tesla, Steinmetz could be promoted as a loveable eccentric. He bicycled from his Schenectady home to G.E. headquarters daily. As a young man he and his room-mate Ernst Berg kept pet cranes, owls, crows, alligator, gila monsters, maintained a greenhouse for orchids and called their Saturday night poker game the "Society for the Adjustment of Differences in Salaries," with Steinmetz elected permanent president. Berg married and moved to another city. A decent but lonely man, in 1906, Steinmetz adopted one of his young proteges, the engineer, Joseph L. R. Hayden. Steinmetz convinced Hayden and his bride to move into his large house and then helped raise their three children as their official grandfather. A loveable eccentric, Steinmetz cared little for money. Steinmetz's salary was trumpeted at \$100,000 a year, when, in actuality he had no set salary but simply asked for checks when he needed them for his research labs, personal needs, or home laboratory. He was also a bit of a prankster. Despite G.E.'s non-smoking policies, Steinmetz was a frequent smoker of long thin cigars. Newspaper reporters were also delighted to interview Steinmetz, hard at work at mathematical calculations at his idyllic country retreat on the Mohawk River. A frequently-distributed G.E. publicity photograph depicted Steinmetz, bearded,

spectacled, hard at work on mathematical calculations while leaning over the center thwart of a canoe floating near the shore.

Even his socialism was non-threatening. In 1919, at the height of the Red Scare in the United States, when the government was destroying the radical I.W.W. union, Steinmetz penned an article, "The Bolsheviks Won't Get You— But You've Got to Watch Out!" In it, he argued that American capitalism was healthy and rarely exploitative. However, there were "industrial plague spots" that needed to be cured. Bolshevism would die out naturally if industries provided a decent standard of living for workers. He proposed a vague system of "industrial cooperation" that would end cut-throat competition and bring down costs for industries. "Industry," he said, "must be permitted to organize for economy, efficiency, and social responsibility."¹⁶⁹ To do so would require either socialized industries, or what he admitted might not appeal to American democratic impulses—a sort of fascist state, controlling all industries.¹⁷⁰ Steinmetz's politics had a more practical side; though childless, he was a long-time school board member in Schenectady and occasionally took over mayoral duties when the socialist mayor George Lunn was out of town.¹⁷¹

Steinmetz reached the peak of his fame in the early 1920s. Newspapers adopted him as their expert on the role of science in modern society. For eager

¹⁶⁹ Charles P. Steinmetz, "The Bolsheviks Won't Get You—" American Magazine, April 1919, 11.

¹⁷⁰ Charles P. Steinmetz, "Industrial Efficiency and Political Waste," Harper's Monthly, November, 1916, 928.

reporters he explained the theory of relativity, discussed science and religion, and evaluated the future of science and technology.¹⁷² G.E. was in the midst of anti-trust litigation, and public relations expert Bruce Barton, who took over G.E.'s advertising in 1922, saw great value in further promoting Steinmetz. Rather than focus on his theoretical work, G.E. realized that Steinmetz's work on lightning arresters, devices to protect power lines from lightning strikes, would make for a simpler narrative. Finally the mathematician could be cast as an inventor. Barton arranged a photo-op visit between Steinmetz and Edison, and the older inventor came to look at the laboratory in which Steinmetz created "artificial lightning." The New York Times ran an article titled, "Modern Jove Hurls Lightning at Will—Million Horse Power Forked Tongues Crackle and Flash in Laboratory."¹⁷³ Others described the "hunchback taming nature" or "Little Wizard with Big Brain."¹⁷⁴

Steinmetz's rise to fame in the 1920s coincided with public fascination with the apparent conflict between science and religion. Scientists of the 1920s frequently wrote articles on religion. The public, thrilled yet bewildered by Einstein's theories and the unstable cosmos it proposed, and intrigued at the fundamentalist Christian challenge to Darwinism, was turning to these new authorities for guidance. In 1923, the prominent physicist Robert Millikan

¹⁷¹ Mary Vanderpoel Hun, "Steinmetz," The Forum, February, 1924, 235.

¹⁷² Kline, 281.

arranged a "Joint Statement upon the Relations of Science and Religion," signed by scientists, religious figures, and statesmen, which insisted that there was no inevitable conflict between these spheres.¹⁷⁵

Fundamentalists, Millikan argued, were foolishly trying to turn the bible into a science textbook. To rely on the bible as a guide to nature was a losing proposition that Saint Augustine had decried as early as the sixth century. Any intricacy of the natural world was a "scientific matter with which religion as such has nothing whatever to do, and which should not have given it the slightest concern."¹⁷⁶ Descriptions of the natural world should be left to scientists, while religion must fulfill its function of creating a more moral society. Religion, according to Millikan, was "the great dynamo for injecting into human society the sense of social responsibility, the spirit of altruism, of service, of brotherly love, of Christ-likeness, and of eliminating, as far as possible, the spirit of greed and self seeking."¹⁷⁷

Millikan's model of the perfect relationship between science and religion was similar to the "separate spheres" model of gender relations in the nineteenth century. That model let men go out into the world of commerce and power and corruption, while women were to remain at home to inject virtue into their

¹⁷³ "Modern Jove Hurls Lightning at Will—Million Horse Power Forked Tongues Crackle and Flash in Laboratory," New York Times, 3 March, 1922, 1.

¹⁷⁴ Kline, 266-68.

¹⁷⁵ Kline, 283.

¹⁷⁶ Robert Millikan, A Scientist Confesses His Faith. Leaflet. (Chicago: American Institute of Sacred Literature, 1927), 5.

husbands, their families, and the body politic. Millikan's model substitutes 'science' for 'men' and 'religion' for 'women.' Accordingly, science goes out questing into the world of nature and matter, while religion stays at home. Held to its proper sphere, the feminine religion was to avoid statements about the natural realm, and instead stand ready to purify and add moral fiber to society and the scientific project. Though there need be no conflict between these spheres, both could benefit from cooperation. "Science without religion obviously may become a curse, rather than a blessing to mankind, but science dominated by the spirit of religion is the key to progress and the hope of the future."¹⁷⁸ Millikan also decreased the tension between evolution and science with a specious argument that evolution offered a mechanism for bringing into arrangements of matter "higher and higher qualities."¹⁷⁹ Willfully misreading Darwin's notion of random variations, Millikan insisted that Nature worked by "law" not "chance."¹⁸⁰

In his writings on the relationship between science and religion, Steinmetz generally followed Millikan's "no conflict" argument. One reporter paraphrased Steinmetz as saying that religion was a "very real power" that was not "measurable in watts or volts" and "beyond the reach of the chemist or biologist."¹⁸¹ Steinmetz based this separation on epistemology, not moral

¹⁷⁷ Ibid., 7.

¹⁷⁸ Ibid.

¹⁷⁹ Ibid., 26.

¹⁸⁰ Ibid., 27.

¹⁸¹ "Sources of Power," New York Times, 8 November, 1922, 14.

necessity. Human consciousness with its subjective basis could not flawlessly determine immutable physical laws. The pursuit of other, spiritual "ultimates," should not threaten scientists. Science and religion relied on "different and unrelated activities of the human mind."¹⁸² That much could lie beyond the cognitive limits that bounded rationality was entirely acceptable to Steinmetz. However, he hinted that to attempt to step outside such limits would result in nonsense; he noted that science contented itself with studying the "finite" while our minds yearned for the "infinite" that was ultimately unknowable.¹⁸³ When addressing the conflict between religion and science, Steinmetz preferred to venture into philosophical rather than religious speculations.

To establish the limitations with which the human mind fashions a vision of the world, Steinmetz paraphrased from Kant's Critique of Pure Reason. Both "space" and "time" were categories not to be found in nature but in mind. To explain this, Steinmetz provided several fascinating thought-experiments, which read like brief ventures into science fiction. For example, Steinmetz considered how human perceptions would be remolded if the human sense of time were 100,000 times faster or slower. In the world of slower sensations, the world of phenomena would appear to speed up 100,000 times. "Much of nature, all moving things, would be invisible to us. If I moved my arm, it would disappear to reappear again when I held it still...The vanishing and the appearance of objects

¹⁸² Ibid.

would be common occurrences in nature; and we should speak of "vanishing" and "appearing," instead of "moving" and "stopping"...nature and its laws would appear to us very different..."¹⁸⁴

Many writers took the occasion of Steinmetz's death in 1923 as suitable material for moralizing. He was much eulogized, with poetic tributes treating him in a saintly manner. For example, one poem included the lines, "We, whom he daily walked among,/ Wondered that godlike head and majesty of brow/Were bound so meanly in flesh."¹⁸⁵ His death prompted another writer to criticize the still-current interest in eugenics, commenting that "strict eugenists would doubtless have cut off at birth the life of the deformed little German immigrant" and then went on to praise him for his genius and humanity and value.¹⁸⁶

John Dos Passos, instead, took Steinmetz's death as an opportunity to critique big business. In The Forty-Second Parallel, Dos Passos described Steinmetz as a great man turned into a "pet" by General Electric. Dos Passos then shifted the "wizard" metaphor to make Steinmetz into G.E.'s "parlor magician." Dos Passos wrote, "and the publicity department poured oily stories into the ears of the American public every Sunday and Steinmetz became the little parlor magician,/ who made a toy thunderstorm in his laboratory..." The engineer, Dos

¹⁸³ Charles P. Steinmetz, "Science and Religion," Harpers, February, 1922, 296.

¹⁸⁴ Ibid., 297.

¹⁸⁵ "Steinmetz," The Forum, Vol. 71. May, 1924, 690.

¹⁸⁶ "A Hunchback Who Played with Thunderbolts," Literary Digest, Vol. 79. 17 November, 1923.

Passos concluded, "was the most valuable piece of apparatus General Electric had/until he wore out and died."¹⁸⁷

Dos Passos was relying on more than poetic license when he insisted that G.E. sought to promote its research in terms of parlor magic. During the 1920s, G.E.'s public relations department hired journalist Floyd Gibbons to give ten-minute radio broadcasts describing the research work being done in Schenectady. Gibbons dubbed the research facility "The House of Magic."¹⁸⁸ After Steinmetz's death, for the 1933 Century of Progress Fair in Chicago, G.E. hired a magician to perform in its "House of Magic" in which they presented the results of their research laboratory's work. And for the 1939 World's Fair, G.E. placed a hundred-foot tall stainless steel thunderbolt outside Steinmetz Hall. Inside, the exhibit included two generators, separated by thirty feet, that sent 10- million- volt lightning bolts across the gap.

General Electric's use of Steinmetz as a figurehead makes a convincing case for corporate America appropriating the "science as magic" metaphor to amuse a passive, simple- minded public. The image of the parlor magician was not as threatening as that of a Promethean scientist who used all of nature as his or her workshop. Yet, as this chapter suggests, this metaphor was not merely the concoction of public relations men but the endpoint of a longer cultural dialogue

¹⁸⁷ John Dos Passos, USA (New York: Modern Library, 1937), 327-8.

¹⁸⁸Roland Marchand and Michael L. Smith, "Corporate Science on Display." In Scientific Authority & Twentieth Century America, ed. Ronald G. Waters (Baltimore: Johns Hopkins University Press, 1997), 161.

with many participants. William Hammer had been trying to impress a group of his friends when he created his “Electrical Diablerie” in Newark in 1883. The electrical industry had early on seized on the image of “The Goddess of Electricity” to suggest the awesome yet civilizing power of electricity. The float “Elektra” of 1892 suggested electricity was a heavenly force that had triumphed over and harnessed nature's dragons.

The appearance of the metaphor of the research scientist as parlor magician rather than as sorcerer suggests that the issue of the heavenly or diabolical potential of technology had momentarily calmed in the 1920s and 1930s. Electricity, no longer a great source of wonder, had become normalized and domesticated. No longer need electricians be likened to Promethean figures who subjugated nature, but rather to stage magicians—technically capable performers who performed wonders using trick mechanisms.¹⁸⁹

The public fascination with scientists' pronouncements about religion in the 1920s suggests that if no longer regarded as “wizards,” scientists had begun to be viewed as members of a new priesthood. Along with the controversy over evolution, interest in Spiritualism also flourished anew in the 1920s. While Tesla refused to address what he regarded as “superstition,” both Edison and Steinmetz

¹⁸⁹ The concern over the heavenly or diabolical nature of science, if no longer a grave concern in the 1920s, would become of great importance again in the 1940s with the advent of the atomic bomb and the atomic energy industry. Even clearer than with the uncovering of electricity, the bomb suggested how scientists could coax diabolical forces from the universe. See Paul Boyer, By The Bomb's Early Light: American Thought And Culture at the Dawn of the Atomic Age (New York: Pantheon, 1985).

were willing to consider the resurgence of interest in Spiritualism of the 1920s.

One of the primary goals of Spiritualism was to assure its adherents that the soul was immortal. While Tesla doggedly maintained his model of the human mind or consciousness as a simple mechanical arrangement, Edison and Steinmetz seemed eager to speculate about the nature of consciousness and the existence of the soul.

In his guise of philosopher, Edison's far from obvious conclusion was that it was foolish to talk of a single soul, as each person was a multiplicity. In 1910 he could write, "We are not individuals any more than a great city is an individual. If you cut your finger and it bleeds, you lose cells. They are the individuals."¹⁹⁰ Quite possibly, Edison was struck by this model because of his own experience as the corporate-entity "Edison"—he was both an individual and a group—the productions and inventions that his entire team of researchers helped develop ultimately were labeled as his creations alone. To justify his vision of the multiplicity of the individual, Edison referred to medical researchers at Rockefeller Center who had managed to keep the organs of a chicken alive long after the animal itself had died, suggesting the life-force could inhabit separate organs even when no longer in the organism as a whole.¹⁹¹

Edison later began to refine his theory to argue that millions of invisible "entities"—an entire swarm—gave each individual its life and shaped and

¹⁹⁰ "Edison's Views on Immortality Criticized," Current Literature, December, 1910, 644.

¹⁹¹ B.C. Forbes, "Edison Working on How to Communicate with the Next World," American Magazine, Vol. 90, no. 4. October, 1920, 11.

directed life processes. He suspected that upon the death of the larger organism these indestructible atoms dispersed and entered new combinations, so destroying the former personality. By the 1920s, Edison reversed himself and thought there was some possibility that when, after the death of an organism, this swarm of minute "entities"—which he now believed were concentrated in the brain's Broca cells—"goes out into space...[it] keeps on, enters into another or last cycle of life and is immortal."¹⁹²

Though unimpressed by what he derided as the "childish" methods of Spiritualists, with their rapping tables and ouija boards, and even inclined to suspect they might be deluding themselves under a form of self-hypnosis, Edison thought there might be some basis to Spiritualist belief. A Scientific American article from 1920 confirmed that Edison, disgusted with the crude methods of the Spiritualists, was working on a sensitive device through which these entities, if they wished, could communicate with the living. He concluded the interview by saying, "I do hope that our personality survives. If it does, then my apparatus ought to be of some use."¹⁹³ Edison's interviewers returned to the notion that electricity was an etheric substance in between the realms of matter and spirit. Likewise, Edison suspected that if any spirits were to speak, they might be former

¹⁹² "Edison's Religion," Literary Digest, 7 November, 1931, 19.

¹⁹³ Austin Lescarbourea, "Edison's Views on Life and Death," Scientific American, Vol. 123, no. 8. 30 October, 1920, 459-60.

"telegraphers or scientists, or others thoroughly understanding the use of delicate instruments and electric currents."¹⁹⁴

Steinmetz, too, attempted to forge a scientific approach to the spiritual realm. He felt that consciousness defied a crude materialistic explanation. In his Harper's article, "Science and Religion," he toyed with the possibility that a form of mind, or what he called "entity 'X,'" might pervade the universe. Mind, or "entity 'X,'" he argued, might be a separate force from either matter or energy. Just as physicists had not included energy in equations until the late nineteenth century, Steinmetz queried whether "entity 'X'" might one day be incorporated in equations along with matter and energy to explain thought processes. And if found there, then this same 'entity X' might pervade all nature; the concentrations would likely be much lower than in the human mind, making it undetectable to our crude senses.

Steinmetz insisted these speculations were not meant to encourage belief in "spiritism or other pseudo-science."¹⁹⁵ He was specifically disgusted by the vogue in séances for "materializations" in which mediums seemed to vomit up weird ectoplasm or other material as proof of visitation by spirits. Yet, his point of departure—an exploration of consciousness—was the launching point for many defenses of Spiritualism and spirituality. William James and other members of the Society for Psychical Research had long argued that transcendent states of mind

¹⁹⁴ Forbes, 11.

might indeed bring some individuals in contact with spiritual realms. Mind, they argued, simply could not be reduced to matter, nor even properly bounded by the concepts of space or time; according to this view, for example, telepathy was a simple case of the transcendent mind—or subconscious mind—that all humanity shared making local links.

The question of the existence of the soul and attempts to communicate with the spirit realm were far from trivial topics to citizens of the turn of the century. These concerns were in the mainstream. Such questions were continuously addressed in popular culture, not only in the parlors of Spiritualists and in popular magazines like Harpers, but also in the tawdry wonder shows of "mystic vaudeville." There, hypnotists, mind readers, and anti-Spiritualist magicians introduced the public to mysteries and marvels, and chased down Steinmetz's mysterious "Entity X" while exploring or debunking hypnotic trances, telepathy and other altered states of mind and being.

¹⁹⁵ Steinmetz, "Science and Religion," 302.

PART TWO: MYSTIC VAUDEVILLE

Chapter Three: The Hypnotist

Before Professor Leonidas, a turn of the twentieth century performer, traveled to a new town, he would send his advance man ahead to install a coffin in a pharmacy window with a placard announcing an upcoming hypnotic show. Upon arriving in the town, Leonidas would hypnotize his youthful assistant, sew his lips shut, set him in the coffin in the pharmacy window and promise the crowd to revive the subject, or "window sleeper," on stage the following evening. During this same era, another stage hypnotist, Walford Bodie M.D., offered another gothic touch to his stage act: the electric chair. After describing the horrors of this new American form of execution, the dashing, caped hypnotist would find a volunteer in the audience, strap him in the chair, mesmerize him to "protect" him from the high voltage, and then throw a switch. The subject would twitch, scream, and otherwise suffer before the appalled yet fascinated crowd.

Bodie's use of the electric chair and Leonidas's use of the coffin as a prop—and the pharmacy window as a stage—suggest the stage hypnotist's conflicted agenda at the turn of the century. Leonidas's choice of the pharmacy window is revealing: at that time such establishments not only offered the "genuine" drugs that orthodox doctors might prescribe, but the many flamboyant cures of the patent medicine industry. Promoting themselves with coffins in

pharmacies and electric chairs on stages, these showmen affirmed a vaguely scientific or modernist worldview—but their promotions also encouraged nostalgia for the premodern era and for the supernatural.

These mixed strategies established the hypnotic performance as a form of wonder show. The performers not only encouraged a scientific or psychological depiction of the mind, but also encouraged a more gothic vision of the mind's—or soul's—capacities and mysteries. Yet this attempt to promote themselves as modern necromancers as well as men of science sent a baffling double message to the public; in particular, it hindered stage hypnotists' attempts to mesh with nineteenth-century interest in reform.

Early in the nineteenth century, mesmerists had highlighted the exalted state of consciousness reached by their somnambulists—or trance subjects. The somnambulist's trance suggested the perfectibility and spiritual potential of the individual. Mesmerism, it seemed, might be a tool for perfecting society. Yet by the turn of the twentieth century, diminished public belief in the marvels of the trance forced stage hypnotists like Bodie and Leonidas to make grotesque displays of their subjects, establishing their own power and control. Paradoxically, such demonstrations intrigued many progressives as a tool for establishing order. Such dramas of power and enslavement, however, also alarmed guardians of the public virtue. With some irony, turn of the century stage hypnotists soon became a target of progressive reform when leading citizens sought to ban stage hypnotic shows.

Historians distinguish the progressive era from earlier reform movements by noting that the progressives rarely adhered to the utopian ideals and religious zealotry of the early nineteenth century. No longer concerned with ushering in a new millennium, the progressives believed that scientific methods and organization could moderate corrupt business and government. At the same time that progressives led important efforts to end corrupt machine politics, to curtail

the excesses of monopoly capitalism, and to improve living conditions for the impoverished, they also campaigned against vice, and could target such breeding grounds for "white slavery" as dance halls and soda fountains, or condemn dime novels that apparently incited readers to acts of violence. The campaign against hypnotism was launched within the context of these other progressive battles—large and small, sublime and ridiculous.

Scholars such as Robert Fuller, Alan Gauld and Alison Winter have examined the cultural significance of mesmerism in the nineteenth century, but so far little attention has been given to the stage acts of the turn of the twentieth century.¹⁹⁶ Rather than share the progressives' distaste for these "degrading exhibitions" or disregard them as negligible, an examination of these performances can provide a fresh window into the era. This chapter will examine the shift in metaphoric readings of stage hypnosis from an early nineteenth-century perfectionist model to a turn-of-the-century progressive model and outline the progressive campaign against stage hypnotism in America. Drawing upon the stage acts and writings of Leonidas, Bodie, and other pamphleteers, this chapter also will explore the strategies of the grotesque and "scientific occult" that variety and dime museum hypnotists employed at the turn of the century.

Marvelous Somnambules

Mesmerism, derived from Anton Mesmer's theory of animal magnetism, evolved from a model based in physics and medicine to an early precursor to

¹⁹⁶ See, Robert Fuller, *Mesmerism and the American Cure of Souls* (Philadelphia, 1982); Alan Gauld, *A History of Hypnosis* (Cambridge, England, 1992); Alison Winter, *Mesmerized: Powers of Mind in Victorian England* (Chicago: University of Chicago Press, 1998).

psychology. Anton Mesmer, an eighteenth-century Viennese physician, had first advanced the argument that the universe was suffused with “animal magnetism,” a weightless, subtle fluid like electricity that need only be conducted into the suffering to cure them. Other mesmerists who followed explored the connection between mesmerism and electricity. One pamphleteer wrote in 1843, “Neurologists tell us that there is a fluid or *nerve-orer* which passes from all parts of the body more or less....this *nerve orrer* (sic.) is supposed by some to be a finer substance than Electricity. I think myself that probily (sic.), it is on this ground, when an individual is charged with Electricity by a galvanic battery very hard, he feels some pains shooting through his system. It appears that it strains the small fibers through which it passes....It is not so with the fluid, as *nerve orer* which passes from the Magnetisor, or the Magnetisee. It appears to harmonize with nature—giving no pain.”¹⁹⁷ Such pamphleteers felt confident that “animal magnetism” was a genuine force. Others attempted to deduce its properties and laws. In 1838, for example, after proposing that hypnotism involved a “ray,” English physician John Eliotson and science lecturer Dionysius Lardner successfully hypnotized subjects via mirrors to prove that hypnotism followed the laws of reflection.¹⁹⁸

¹⁹⁷ George W. Alden, An Essay on Human Magnetism: and Its General Views and Principles, as it Remains in its Embryo (Columbus, Ohio: the author, 1846), 7. From Harry Houdini, Mind Reading Pamphlets, Vol. 3. Rare Book and Special Collections. Library of Congress.

¹⁹⁸ Winter, 53-4.

Largely because of the experiments of Mesmer's disciple, the Marquis de Puységur, however, interest shifted from the possible physical basis of mesmerism to its psychological implications. The debate over whether "animal magnetism" involved an actual "fluid" became less relevant than studies of mesmerism's effects. Puységur insisted that mesmerism provided a new model of the mind. Puységur believed that after establishing a magnetic rapport with some subjects, he could then transmit his thoughts and will to them. More significant from a medical point of view, Puységur also "...discovered that a somnambulist could see his own insides while being mesmerized, that he could diagnose his sickness [or that of others] and predict the day of his recovery, that he could even communicate with dead or distant persons."¹⁹⁹

In the mid-1830s Charles Poyen left France to give the first lectures about mesmerism in the United States. During his performances, Poyen magnetized volunteers and cured illnesses, and his "somnambule"—or trance subject—demonstrated the progressively more lucid—even clairvoyant—states of mind revealed under hypnosis. In these wonder shows, the somnambule often diagnosed the ailments of audience members and prescribed treatments as well. Though the mesmerist certainly sought to impress the audience with his own grave powers, the somnambulist also was a featured player in the act. These subjects, like the mysterious "Veiled Lady" who traveled with a mesmerist in Nathaniel Hawthorne's 1852 novel The Blithedale Romance, could become objects of public interest and speculation.

¹⁹⁹ Robert Darnton, Mesmerism and the End of the Enlightenment in France (Cambridge, Massachusetts, 1968), 58.

Poyen's tour prompted an American fascination with animal magnetism and mesmerism. Soon dozens of visiting and home-grown mesmerists were traveling with their somnambules and giving demonstrations and offering cures in theaters, rented halls, and the homes of the wealthy. By 1843, according to one estimate, as many as two hundred storefront magnetizers worked in Boston.²⁰⁰ Robert C. Fuller argued that by demonstrating hidden powers of the mind and suggesting a scientific basis for quasi-mystical experiences, including conversion experiences, this movement appealed to the revivalist climate in the U.S. and dovetailed with popular beliefs in the perfectibility of man and society.²⁰¹ Mesmerism also legitimized the beliefs of the followers of the Swedish mystic Emanuel Swedenborg and the beliefs of the Spiritualists—by offering an apparently scientific explanation for how humans could contact "higher" realms of spirit.

The religious revivals of the early nineteenth century encouraged hopes that a new millennium was dawning, which would see the perfecting of humanity. The works of John Bovee Dods provide a good example of how mesmerism could be adapted to the perfectionist mindset. Dods was a Massachusetts minister and an eloquent antebellum defender of mesmerism. He championed a perfectionist notion of mesmerism, employing ringing prose similar to that of the transcendentalists of his home state. Dods likened mesmerism to “mental electricity” and employed this tool to uncover aspects of what he termed “electrical psychology.” During a speech to the U.S. Senate in 1850, Dods

²⁰⁰ Gauld, 185.

²⁰¹ Fuller, 21.

remarked, “Man is intellectually a progressive being. Though confined to a narrow circumference of space, and chained to this earth, which is but a small part of the unbounded universe, yet as his mind wears the stamp of original greatness, he is nevertheless capable of extending his researches far beyond the boundaries of this globe. His mind is capable of ceaseless development of its powers.”²⁰² Mesmerism, or electrical psychology, was one avenue by which Americans could seek to unfold the dynamic potential of mind.

The American medical community did not give mesmerism as hearty a welcome as the U.S. Senate offered the golden-tongued Dods. In 1838, physician David Meredith Reese wrote Humbugs of New York and dedicated one chapter to mesmerism, which he called "the present reigning humbug in the United States." Of the somnambules' supposed clairvoyant abilities, Reese sarcastically remarked that one somnambule, deep in a trance, was asked to describe a stranger's house and said, "it was built of brick, that it had a front door, that there was a table and two chairs in the hall, a carpet on the floor, and on being asked if she saw anything else, she discovered a lamp, a back-door, or a staircase, with divers other similar wonders."²⁰³ Scare literature also featured evil mesmerists who metaphorically seduced innocents, but it was not until the progressive era that such concerns led to legal efforts to control mesmerism.

The orthodox medical and scientific establishment took periodic interest in hypnosis during the nineteenth century—first when it appeared to offer a

²⁰² John B. Dods, The Philosophy of Electro Biology (New York: Da Capo Press, 1982 (1850)), 17.

promising form of anaesthetic, and later when clinicians applied hypnotism as a treatment for mental illness. Beginning in the 1870s, the French neurologist Jean Martin Charcot used hypnotism to treat hysteric patients in his clinic outside Paris and theorized that the hypnotic trance represented a pathological state similar to hysteria. The work of Charcot's school provided a foundation for the psychoanalytic theory of the subconscious. It also was largely a result of Charcot's pathology theory of hypnotism that reformers became convinced that lay hypnotists could damage subjects. By 1900, however, most researchers of hypnotism had shifted allegiance from Charcot to his French rival Hippolyte Bernheim, who argued that while the hypnotic trance represented a unique state of consciousness that was largely one of alert imagination, openness to suggestion, and desire to please the hypnotist.

With such redefinition, hypnotism became less of a symbolic threat to medical orthodoxy. Part of the fascination with mesmerism when it first arrived in America stemmed from the fact that mesmerism subverted the physician's traditional authority. Instead, the patient's individualism and freedom were heightened. During the 1840s, colleagues of a leading British physician, John Elliotson, forced him to resign his post at University College Hospital when the working class subjects of his popular mesmeric demonstrations in the medical theater began to present themselves in an uncontrolled manner, often deriding

²⁰³ David Reese, *Humbugs of New-York*. Reprint. (Freeport, New York: Books for Libraries

Elliotson during his lectures.²⁰⁴ Such an inverted power relationship, which would clearly make modern physicians uncomfortable, also is demonstrated in the pamphlet of The Kennedy Brothers, late nineteenth-century performers who straddled the historical divide between the eras of mesmerism and hypnotism.²⁰⁵ After a first session, they urged the practitioner to ask the subject how he felt, and then to ask "First: Whether your manner of procedure agrees with him, and if he can point out a better; Second, whether he can think of anything that would be useful to say or advise...[and] whether he is able to look into your system, or his own, and say anything concerning them...His answers to these questions will teach you how to interrogate or experiment with your subject, or whether you should at all..."²⁰⁶

As hypnotism branched into the early twentieth-century fads for auto-suggestion and positive thinking, a few researchers left open the issue of whether the hypnotic state itself might have the otherworldly attributes mesmerists once had claimed. In 1890, William James reported that the sensory powers of hypnotized subjects often increased greatly²⁰⁷ and argued, along with other

Press, 1971 (1838)), 49.

²⁰⁴ Winter, 60-78.

²⁰⁵ The divide between "mesmerism" and "hypnotism," though somewhat murky, is usually traced to the studies of British physician James Braid in the mid-nineteenth century; Braid and others rejected the assumption that the mesmerist was transmitting a subtle fluid to the patient, he preferred the name hypnotism and the assumption that a state of mind was being encouraged.

²⁰⁶ Kennedy Brothers, Handbook on Mesmerism and Hypnotism (New York: Benedict Publishing Company, 1883), 24.

²⁰⁷ William James, The Principles of Psychology, Vol. 2. (New York: Dover Publications Inc., 1950 (1890), 595.

psychic researchers, that the trance might indeed provide access to submerged streams of consciousness and, potentially, to the spirit realm.

Dime Museum Scientists

Progressive-era stage hypnotists plied the marvels of hypnotism at a time when its marvelous nature, for the greater public, had diminished. Rather than insist on hypnotism's marvelous features, or the wonders of the trance, showmen instead made a spectacle of grotesquerie and mimicked the procedures of science. Hypnotists rarely made the better vaudeville circuits, and were usually featured instead in dime museums or traveled on circuits of their own making. Harry Houdini, for example, before gaining fame as an escape artist, performed briefly in circuses and dime museums as a hypnotist under the name Professor Murat.²⁰⁸ Unlike Houdini, many turn-of-the-century hypnotists remained behind in the dime museum's curio hall—a room with small stages or platforms provided for the various attractions. There, a lecturer who used the title of “Professor” or “Doctor” introduced the hypnotist and other platform attractions: whether human oddities, entertainers, or educational artifacts. One week's curio attractions for Worth's Family Museum in New York City in 1891 included Mlle. Agnes Charcot, a female hypnotist (who borrowed her surname from the French neurologist); Professor Dufrane, “the anvil man,” who allowed big stones to be broken on his

²⁰⁸ Kenneth Silverman, Houdini!!! (New York: Harper Collins, 1996), 16.

chest; and Cunningham's Samoan Warriors.²⁰⁹ And in 1892, a Philadelphia dime museum's advertisement could boast the "First Appearance in the country of THE HUNCHBACK PONY," "The WONDERFUL DE GRAY BROTHERS. Hypnotic Marvels," and "OTHER STRANGE CURIOSITIES."²¹⁰

Robert Bogdan has argued that curio halls promoted freaks in either an "exotic" or an "aggrandized" mode. The exotic freak was presented as savage or degenerate, whereas the aggrandized oddity—often the same person—was introduced as a finely dressed and accomplished gentleman or lady whose talents had helped him or her overcome adversity. The aggrandized mode catered to the audience's sense of moral uplift.²¹¹ In the curio hall, the Wonderful De Gray Brothers, hypnotic marvels, might out-muscle hunchbacked ponies – whether living samples or stuffed exhibits – but rank lower in status and pay than such aggrandized oddities as the Martin Sisters, The Beautiful Albino Twins – listed for the previous week at the same Philadelphia theatre.

Like the other oddities of the curio hall, the hypnotist was promoting images of the "grotesque" – through the odd behavior he or she induced in trance subjects. The hypnotic show created a temporary freak show, revealing the thin boundary that separated the norm from the bizarre. Such a connection was made explicit in the how-to-hypnotize pamphlets of the era, which recommended that the hypnotist persuade a volunteer that he was running a sideshow, and this delusional stage barker would then regale the audience with his salty patter as he described the imaginary freaks around him.²¹² In the dime museum milieu, the hypnotists' behavioral version of the "grotesque" was competing with the

²⁰⁹ G. Odell, *Annals of the New York Stage, Vol. XIV* (New York: Columbia, 1945), 674.

²¹⁰ *Amusement Bulletin* (Philadelphia), October 31, 1892.

²¹¹ Robert Bogdan, *Freak Show: Presenting Human Oddities for Amusement and Profit* (Chicago: University of Chicago Press, 1988), 104-11.

embodied grotesquerie of a bearded lady, a Wild Man, or a Samoan Warrior. The curio hall hypnotist might also be competing with “wholesome” displays of female beauty, beautiful baby pageants, or vigorous cowboys and lively acrobats in the main theater.²¹³ Having little choice, hypnotists accepted a middling rank even in the lowly curio hall, or created their own tours, visiting fraternal organizations and community clubs.

Hypnotists attempted to boost their appeal—or in Bogdan's terms, make themselves into "aggrandized" freaks—by presenting themselves as gentlemen or gentlewomen of science. Itinerant mesmerists had first employed this strategy. For example, the narrator of Hawthorne's The Blithedale Romance (1852) remarks, “Now-a-days, in the management of his ‘subject,’ ‘clairvoyant,’ or ‘medium,’ the exhibitor affects the simplicity and openness of scientific experiment...Twelve or fifteen years ago, on the contrary, all the arts of mysterious arrangement...were made available in order to set the apparent miracle in the strongest attitude of opposition to ordinary facts.”²¹⁴ A pamphlet from 1900 even argued that hypnotism was superior to other sciences, as it dealt with subtleties of the mind rather than the laws of crude matter. The pamphleteer provided a sample speech for exhibitors that argued, "I call it a science...It deals with the invisible but living mind, the thinking part of our nature, while the other

²¹² X. Sage, and T. Adkin, Scenes in Hypnotism and How To Produce Them (Rochester: New York State Publishing Company, 1900). Not paged. Magic Castle library.

²¹³ Regarding Mikhael Bakhtin's discussion of the “carnavalesque” and the festive grotesque style, stage hypnotists evoked displays of what Bakhtin might categorize as the later and less salutary “Gothic” or Romantic grotesque style. See Bakhtin, Rabelais and His World (Cambridge: M.I.T. Press, 1968), 37.

sciences have their application only to lifeless matter. For that reason alone we must believe its applications are boundless."²¹⁵

Stage hypnotists maintained this strategy well into the twentieth century. According to vaudeville chronicler Joe Laurie, hypnotists of the 1920s and 1930s continued to stress science, noting they “never referred to it [hypnotism] as an ‘act,’ but always billed it as a ‘scientific demonstration.’” Of a favorite showman, Laurie wrote, “Pauline was the tops; he had a fine personality, spoke like an actor – doctor, always referred to ‘this experiment, which I performed before the world’s greatest scientists...’”²¹⁶ Another early twentieth-century performer, The Great Newmann, often advertised his act as “Two Hours of Clean, Psychological Amusement, Scientific Entertainment and Mysterious Fun.”²¹⁷

In insisting on a scientific presentation, hypnotists were neatly accommodating their acts to the worldview the dime museum promoted. By the late 1800s, promoters of dime museum and sideshow acts chose to introduce their human oddities less as extravagant creations and more as medical case studies. This strategy changed the human oddity from the level of simple spectacle to that of an educational exhibit. The dime museum offered a funhouse mirror reflection

²¹⁴ Nathaniel Hawthorne, Nathaniel Hawthorne Novels (New York: Library of America, 1983 (1852)), 635.

²¹⁵ L.A. Harraden, Hypnotic Exhibitions (Jackson, Michigan: The author, 1900), 21-22.

²¹⁶ Joe Laurie, Vaudeville from the Honky Tonks to the Palace (New York, 1953), 110-11.

²¹⁷ Playbill. "The Great Newmann." Library of Congress. Rare Book and Special Collections.

of the scientific and medical world—mimicking such rituals as the experiment and medical demonstration to gain credibility.

Enter the Master of "Bodic Forces"

In the 1890s British hypnotist Walford Bodie, M.D., pushed the dime museum conventions to their limit. He created a stage spectacle that combined elements of the grotesque, magic, and science, by splicing together electrical displays, electrical executions, and the medical marvel of hypnotic healing. Bodie was born Samuel Murphy Brodie in Scotland in 1869. As a child he practiced magic and ventriloquism, and as a young man he worked for the Scottish National Telephone Company and so gained expertise in the then-pioneering field of electricity. His sister married into a theatrical family, and soon after, Brodie helped manage a variety theatre. One year later he took on the stage name "Doctor Walford Bodie, M.D." (as he explained to one judge, the initials "M.D." stood for "Merry Devil") and initiated an act that was to make him a frequently-copied showmen in Europe and America.

To the standard gentleman's garb and demeanor, Bodie added a moustache that would have made Salvador Dali envious: a neat rectangle flanked at each side with two thin, tweaked daggers, upended at 45-degree angles. This moustache was striking enough for Charlie Chaplin to imitate on the English variety stage in 1906 when he burlesqued the great hypnotist.²¹⁸ Performer J.F. Burrows, who used the stage name Karlyn, in 1912 wrote a book "unmasking"

²¹⁸ Ricky Jay, Learned Pigs & Fireproof Women (New York: Warner Books, 1986), 137.

Bodie's act; the frontispiece photo of Burrows, Bodie's "unmasker," shows him with a Bodie moustache, and a similar evening coat and hair-style. Like the era's muckraking journalists, turn-of-the century vaudeville performers often "unmasked" one another—indicative of an ongoing cultural obsession with authenticity.²¹⁹

Bodie's act relied on spectacles both magical and scientific—on faith healing, and on displays of electrical effects. Bodie melded these realms with his pronouncements about the healing force that had once been called animal magnetism but which he preferred to call the "Bodic Force"²²⁰ – also at the heart of the new philosophy of "Bodieism." As he noted in the preface to the Bodie Book (1905), "My method of cure, being connected with electricity on the one side and with the mysteries of occult science on the other, could not be explained in a few words." But, sounding much like the earliest mesmerists, he insisted that "the sorcery and supernatural agency of the dark ages have become the scientific facts of today."²²¹ In step with the progressive age, his was a confused gospel of scientific – and religious—miracles, expressed on stage with leyden jars, condensers, and machines that sparked and caused strong men to quiver, and cripples to throw aside their crutches and promenade.

²¹⁹ Miles Orvell documented this fascination with imitation and exposure in The Real Thing (Chapel Hill, North Carolina: University of North Carolina Press, 1989).

²²⁰ This name likely punned on the "Odic Force" that Karl, Baron von Reichenbach argued could explain mesmerism and other paranormal abilities.

²²¹ Walford Bodie, The Bodie Book (London, Caxton Press, 1905).

Bodie's use of electrical devices helped to reinvigorate the somewhat tired hypnotic act and to promote public faith in scientific progress. At the turn of the century, cities were just beginning to glow with electricity, and inventors such as Thomas Edison, Nikola Tesla, and Alexander Graham Bell were being heralded as "wizards." Bodie's act clearly imitated Tesla's penchant for bathing himself in 250,000 volts or more of high-frequency (but low amplitude) current, which made his entire body glow with an aura of electrical flames.²²² Bodie was among the more prominent of the entertainers who brought lesser electrical effects to the variety stage. According to Odell's Annals of the New York Stage, dime museums in 1890 also featured such acts as Mattie Lee Price, the Electric Girl; The Electric Three; Barella and the Electric Chair; and La Pierre's Electric Exhibition.

Bodie's staging extended to the theater lobby. He transformed it into a simulacrum of the entry-room of a holy shrine where miracles take place, filling it with framed testimonials to cures, as well as displays of crutches and "irons" that the formerly-paralyzed or disabled had thrown aside. Such trappings suggest Bodie's insight into what anthropologist Victor Turner later termed the "liminal" aspects of theater—its status as a separate place where stagings might evoke in the spectator a sense of transformation akin to that of a tribal rite of passage.²²³

²²² Marc J. Seifer, Wizard: The Life and Times of Nikola Tesla (Secaucus, N.J.: Carol Publishing Group, 1996), 113.

²²³ Victor Turner, From Ritual to Theater (New York: Performing Arts Journal Publications, 1982), 20-59.

His electrical apparatus could feed the hopes of spectators who had walked through the lobby and awaited his appearance in the darkened theater.

Bodie's use of the stage as a setting for miracles extended the sense of awe first evoked in the spectators when they passed through the lobby. When the curtain opened for the act, the stage was revealed with Bodie's somber assistants standing near magnificent electrical apparatus, throbbing with lights and sparking to dramatic effect. Bodie said that when he strode out into the limelight and began his explanation of his science and medicine and commented that the newspapers liked to attack him for his "modern miracles," a heckler might shout, "Miracles! Oh, oh! D'you work miracles then?"

To such hecklers, itching for a fight, Bodie would respond, calmly, "I said what they CALL miracles."

"Right! Take it! But do you call them miracles?"

"I do not claim to work miracles...But if I did, the very first one I should attempt would be to instill a grain of sense into your head."²²⁴

As Burrows suggested, since hecklers helped establish the hypnotist's authority—and in this case prepared the audience for possible miracles—such useful souls were often planted in the audience. The first part of his act was designed to establish the hypnotist's mastery of mysterious forces and convince the audience that miracles would indeed occur. To this end, Bodie would explain

²²⁴ Walford Bodie, The Bodie Book (London, Caxton Press, 1905), 35.

the electrical equipment, invite a "committee" on the stage, cause some of them to go in convulsions while gripping the same handles he could hold with no effect (because he was standing on an insulated pad on the stage), make sparks fly between subjects' fingers and the apparatus, and so on.

At the turn of the century, there was much discussion that middle-class males were growing weak and effeminate because of their white-collar work. The "cult of the strenuous life" developed to encourage physical fitness and toughness. Many young men of the patrician class went West to "toughen up" and prove themselves, including Theodore Roosevelt, Frederick Remington, and Owen Wister, who penned numerous articles about the west, and several novels, including The Virginian (1911), which served as a template for most of the western movies and novels that followed. Social reformers encouraged participation in organized sports such as baseball, football and gymnastics. Body building also became an emerging obsession. Recent scholars also have placed the strenuous stage escapes of Harry Houdini within this cult.²²⁵ In keeping with this turn-of-the-century concern, Bodie, a friend and admirer of Houdini's, boasted he could withstand electrical forces that would stun or kill the average man. In his earlier days he insisted that 4,000 to 6,000 volts passed through him. Perhaps after learning that Tesla submitted himself to 300,000 volts and more of electricity,

²²⁵ See Kenneth Silverman, Houdini!, and John Kasson, Houdini, Tarzan and the Perfect Man (New York: Hill and Wang, 2001).

Bodie continued to up his voltage count while regulating the amperage (or current) to keep the power output at a safely low level.

These demonstrations of Bodie's power followed from romantic notions that genuine electricity and "animal magnetism" were analogous – a theory that had convinced many to submit themselves to electrification as a therapeutic method. Luigi Galvani's experiments that showed that the leg of a dead frog would kick after he applied electrical current first encouraged this theory. As early as the 1830s, electrical galvanism had become fashionable and an English hospital administered "electrical baths" to sufferers of nervous diseases.²²⁶ The writing of mid-nineteenth century mesmerists, like Dods, who preferred to call their field "electrical biology," reinforced such associations. Even in the late nineteenth century, the Scottish physicist Lord Kelvin was still positing that there was a connection between electricity and the life force, giving credence to electrical therapy.²²⁷ New electrical healing devices abounded. Tesla electrified himself daily as part of a therapeutic regime, while the Sears catalogue peddled electric nerve toners to the public.²²⁸

At a time when the "body electric" was becoming a reality, Bodie's act and persona made sense. His dazzling stage displays and his apparent ability to cure people with hypnotism and electricity helped to reinforce the public's faith in

²²⁶ Iwan Morus, *Frankenstein's Children* (Princeton: Princeton University Press, 1998), 236.

²²⁷ Seifer, 91.

electricity and progress. Bodie then tested that faith in progress—following his opening sequence of electrical effects, Bodie would dismiss his bedazzled and traumatized stage committee, and his assistants would bring out a replica of the American electric chair. This, too, had been displayed in the lobby. In the 1920s, Bodie displayed the original electric chair used at Auburn Prison in New York. His friend Harry Houdini had purchased the chair and sent it as a gift after receiving several pleading letters from Bodie.²²⁹ With the electric chair beside him, Bodie would make a reform-minded speech describing the horrors of this method of execution.

According to Burrows, during this part of the show, the stage hypnotist "thrills the audiences with accounts, more or less imaginary...He tells how...one was tortured for half an hour before death released him, and another was practically burned alive."²³⁰ Despite Burrows's sarcasm, early accounts of electrocutions suggest that Bodie did not need to stray far from the truth in describing the horrors of this form of execution. After his speech Bodie would strap an assistant, posing as an audience volunteer, into the chair. Next Bodie hypnotized the subject to "prevent electrocution." After further demonstrations of

²²⁸ For a study of the cultural implications of these electrical health devices, see Carolyn Thomas de la Peña, Technobodies: Industrial Energy and Exercise in the Making of the Modern American, 1875-1945 (New York: NYU Press, forthcoming 2002).

²²⁹ Houdini and Bodie had met in Europe in 1909 when both were successful performers. In 1920, their fortunes had changed. In a series of letters to Houdini, the down on his luck Bodie essentially begged for the electric chair as a present. Bodie to Houdini, 8 April, 1920; 22 April, 1920; 30 April, 1920; 17 January, 1921. Harry Ransom Humanities Research Center (HRHRC).

the chair's functions, Bodie or his assistants turned on the full current, and the subject began to tremble and shake. According to the Aberdeen Journal, during one such performance, "the awfulness of execution was borne to the audience...Dr. Bodie watched closely and when the [subject's] face became black the current was switched off. After vigorous slapping, the subject was restored to consciousness."²³¹

In Bodie's cunning show, death was followed with symbolic resurrections. To top the thrills of the electric chair mock-execution, Bodie moved on to his cures. The hypnotist and his assistants had earlier auditioned the town's disabled population and chosen the best candidates for a stage cure. During the performance, his assistants carried the disabled person on stage. Once seated, the patient was "hypnotized" by Bodie, who made a few passes in front of them. Next he manipulated and massaged their damaged limb to "remove adhesions" – or old scar tissue that blocked motion. To complete this "bloodless surgery," Bodie applied electrical current. The patients then were revived from their slumber, and to the tears and astonishment of the audience, and appropriate music from the pit orchestra, they walked off stage unassisted.

Bodie, to a certain extent, was running a medicine show. He auditioned invalids in towns, chose some for his acts, and sold those he rejected useless

²³⁰ J.F. Burrows, The Secrets of Stage Hypnotism; Stage Electricity; and Bloodless Surgery (London, 1912). 18.

²³¹ Cited in Jay, 130.

liniments. His act made the most of theatre's "liminal" aspect. His hypnotic and technological miracles prepared his audience for the cures just as tribal shamans offered demonstrations of power during healing ceremonies to build up their audience's expectations and sense of awe. During such preliminaries, the shamans would often dramatize their initiation story which ultimately involved a symbolic death and rebirth with the help of spirits. Bodie's apparent ability to kill and then rejuvenate a subject with the electric chair mimicked the death and resurrection patterns common to the shaman's ritual.

Bodie's decision to exhibit himself as a miracle worker led to court challenges and a public humiliation from which he never entirely recovered. The established medical community saw him as a nuisance at best. In 1905 the Medical Defense Union in London sued him for fraudulent claims on his posters and the court gave Bodie a small fine. In 1909, a gullible assistant who had paid Bodie 1,000 pounds to learn the medical-hypnosis trade sued Bodie because he had only been taught how to fake tricks on stage. The London papers covered the colorful trial and ran articles with headlines such as: "Secrets of a Hypnotist—Extraordinary Disclosure of Imposture in Music Hall Entertainments." While his medical degrees and most of his stage work, including cures, were shown to be phony, Bodie did bring on several witnesses who testified to successful cures. But Bodie was found guilty of breach of contract and his assistant awarded 1,000 pounds.

The week after the trial, students rioted at a Bodie performance in Glasgow. No sooner had he stepped on stage than "the fusillade began." Bags of flour, eggs, and red and yellow ochre were thrown at him. A second riot broke out during the same theater run and Bodie was forced to come out and apologize to the students for calling them "no gentlemen, and a disgrace to the university." After his apologies the students marched, chanting, "Victory is Ours!" And "Bodie, Bodie, quack, quack, quack!"²³²

Bodie's humiliation was an outgrowth of his risky strategy of taunting the orthodox medical establishment. Four years prior to the trial and riots, Bodie had dedicated his Bodie Book to "British Medical Men" in the hopes that it might "enable them to perform even more efficiently than at present their duty to the millions who turn to them in times of pain and sickness." He also insisted he could always spot a medical man in the audience, diagnosing specimens of this type as "suffering from acute bigotry, brought on by excessive dogmatism."²³³

Following the miraculous cures, the final part of an evening with Bodie would involve a more typical display of stage hypnotism with a few electrical trappings, played out to humiliate subjects and flatter audiences. Electricity was added to this part of the night as when two "lovers" were told to kiss and actual sparks flew between their mouths—a hoary trick first developed in the 1700s. At

²³² "Students Rag 'Dr.' Bodie. Wild Riot Scenes in a Glasgow Music Hall." Lloyd's Weekly News. 14 November, 1909. Not paged. Houdini "Hypnotism" scrapbook. Library of Congress. Rare Book and Special Collections.

²³³ Bodie, 37.

the climax of this section of the act—true for most hypnotic shows—the hypnotist would take the subjects out of their trances, but one would not respond.

The hypnotist would gravely tell the audience that this subject had reached the deepest stage of hypnosis, catalepsy. He would then walk up to the unfortunate sleeper, make a pass, and say, "Go rigid!" This subject, commonly called a "plank," would then be set across the backs of two chairs and heavy anvils would be placed on his chest and struck with hammers, or the hypnotist would put a boulder on the sleeper's chest, and ask a strong volunteer to smash it to pieces with a sledge hammer. Several might also be encouraged to climb up and stand on the "plank." While standing on top of the subject, the hypnotist might command the sleeper to relax and then go rigid again, riding him down and up like a wave. Ultimately, the "plank" would be revived. The miracle here no longer focused on the subject's powers of mind, but on the subject's body—more specifically with the powers of the hypnotist's mind over his subject's body.

The Regulation of "Degrading Exhibitions"

Displays of the hypnotist's power led to great public concern. The control of the hypnotist over his subject was explored in George du Maurier's 1894 novel, Trilby, which introduced to the world the fictional mesmerist Svengali. Adapted to the stage in America in 1895, it was enormously popular. By 1896 there were

numerous productions running simultaneously in American theaters. The play describes a Bohemian artists' model with no musical talent who falls under the hypnotic spell of Svengali, a music instructor. When placed in trances she becomes a celebrated concert singer. But when the mesmerist dies, her gift vanishes. While Trilby may have helped drum up audiences for stage hypnotists—frequent references to Trilby began to appear in their publicity²³⁴—the play also highlighted a troubling side of the hypnotist's alleged powers and may have added to the age's concerns about hypnotism's dangers.

While many had once hailed mesmerism as a metaphor for the liberation of spiritual potential, many now easily could criticize hypnotism as a metaphor for exploitative control. Borrowing from the “Svengali” mold, the covers of nineteenth and twentieth-century pamphlets for hypnotism tend to show a male hypnotist exerting electrical power over a weakening female subject, supporting a popular notion that the hypnotist was imposing his will—and conceivably making a sexual slave of a weaker subject.

According to this line of reasoning, the more feminine and passive the subject, the better. Hypnotists' pamphlets often argue that not only women but also factory workers and soldiers—trained to obey—made ideal subjects. One of mesmerism's earliest critics, New York physician David Reese, in 1838 noted

²³⁴ Bodie, for instance, introduced a singing assistant, Mystic Marie, at this time. Sheet music for “The Bodie Hypnotic Waltz,” dedicated to Mystic Marie, the “real Trilby,” was available in London. See Jay, 1986, p. 141.

that somnambules tended to be “factory girls”—at that time manufacturers also preferred young women as workers, as they were assumed to be more tractable than men. A pamphleteer of the 1880s, curiously attributing a similar docility to Russians, insisted that of all nationalities they were the most easily mesmerized. Natives of tropical climates were also favored. The Kennedy Brothers urged mesmerists to "seek those of lighter eyes and complexion than yourself; it is found exceedingly hard to affect those of darker eyes...Blacks, nevertheless, make capital subjects for exhibiting the physical phenomena."²³⁵ The Kennedy Brothers preferred lighter-skinned subjects to exhibit the "higher" phenomena such as clairvoyance. But an African-American was fine for behavior modification displays. Such notions fit the racist stereotype of the plantation tradition that viewed African-Americans as childlike and simple. Such racist stereotypes continued so that a hypnotist in the mid-twentieth century could still argue that “Members of the black race are easiest to hypnotize, probably because their origin is in the torrid zones.”²³⁶

Pamphleteers never speculated on whether a "member of the black race" could be a successful "operator" or hypnotist, but did give grudging room to female hypnotists like Mlle. Agnes Charcot who performed at Worth's Family Museum in New York City. One pamphleteer, Albert Cavendish, set the record

²³⁵ Kennedy Brothers, Handbook on Mesmerism and Hypnotism (New York: Benedict Publishing Company, 1883), 19.

²³⁶ Harry Arons, Master Course in Hypnotism (Newark: Power Publishers, 1948), 7.

straight by noting that "There has been several ladies who have been expert and powerful operators, getting even very strong men very quickly into mesmeric coma."²³⁷ In his 1901 primer, Professor Leonidas states that women can be fine hypnotists but cautions that a "lady of genteel bearing is the one for the hypnotic stage. She must never assume the masculine attitude."²³⁸ He also insisted that boys were preferable as subjects, primarily because they were more suited to the rough and tumble of life on the road.

The hypnotists' reliance on a grotesque performance mode added to public fears of the hypnotist's conceivable misuse of power. Leonidas defended hypnotism as a "science that has been much abused," but he also didn't apologize for promoting a gothic vision of hypnotism. He carefully chose his stage name and recommended that other performers also "choose an old world name; something that savors of the pyramids, ancient, antique."²³⁹ And, as indicated at the beginning of this chapter, after making a speech before a pharmacy window, and hypnotizing his night-gowned assistant, Leonidas would sew the assistant's lips shut, lay him down in a coffin and promise the crowd to revive the "window sleeper" twenty-four hours later on stage.²⁴⁰

Other hypnotists increased the macabre element of such promotions. Some hypnotists, desperate to drum up public interest, promised to bury their subjects in

²³⁷ Albert Cavendish, How to Become a Mesmerist (London: The Scientific Publishing Company, circa. 1890), 12.

²³⁸ Professor Leonidas, Stage Hypnotism (Chicago: Bureau of Stage Hypnotism, 1901), 7.

graves for days at a time. Hypnotist George Newmann kept a clipping that described a hypnotist who had buried his sixteen-year-old assistant for three days in the Woodlawn Cemetery in Lexington, Kentucky. A crowd of one thousand came to see the assistant wake up and then proceed to drink water and eat graham crackers.²⁴¹ Such displays encouraged a vision of the hypnotist as "vampire"—feeding off the life blood or animal magnetism of his subjects. In Henry James's The Bostonians (1886), the father of the heroine is the seedy magnetizer Selenah Tarrant who has a "vampirish grin."

Hypnotists also resorted to grotesque antics in a more "scientific" mode for dramatic effect. During his act, Leonidas would call local physicians to the stage and have them monitor the blood pressure and pulse of hypnotized subjects that he would then jab with needles. He would explain to the audience that in many cases major surgery had been performed with hypnosis serving as the "anesthetic."²⁴² As a special shock, he might sew the lips of two youths together and command them to laugh. Such acts were great hits. Defending his tactics, Leonidas remarked, "The best entertainment in hypnotism is that which possesses

²³⁹ Leonidas, 10.

²⁴⁰ *Ibid.*, 37-9.

²⁴¹ George Newmann Papers. "Miscellania Hypnotica." Compiled 1928. Clipping not dated. Library of Congress. Rare Book and Special Collections.

²⁴² The Professor was not humbugging the crowd. In the nineteenth century, many surgeons and dentists did successfully perform surgery using no other anesthetic than hypnotism. Winter argues that orthodox physicians began to experiment with chloroform and ether primarily to displace mesmerism as a means of pain-management.

the funny side, presents the grotesque and at the same time does not give anything that is really injurious to the subjects."²⁴³

In the 1890s, various cities in Europe and the United States began to consider laws outlawing stage hypnotism. In addition to concerns about criminal or sexual abuse via hypnotism, physicians added that hypnotism could damage the health of subjects. Individual performers occasionally were brought to court for damaging or failing to cure volunteers. Medical experts who accepted French neurologist Charcot's influential studies connecting hysteria and hypnosis concluded that "a dormant hysterical tendency could be awakened by a non-professional hypnotist."²⁴⁴ Physicians were concerned about the physical and psychological side-effects of hypnotism on trance subjects, both amateurs and professional "human planks."

To claim that physicians were chiefly responsible for the turn of the century push to ban stage hypnotism in America would be an exaggeration. As of 1900, the American Medical Association had little national power and only 8,000 national members.²⁴⁵ In this period, national and local chapters of medical associations had larger targets. For example, they sought to reform medical education—targeting the schooling of unorthodox groups such as osteopaths, homeopaths, and the herbal-remedy based eclecticists. Orthodox physicians—or

²⁴³ Ibid., 17.

²⁴⁴ Jean-Roch Laurence and Campbell Perry, Hypnosis Will & Memory (New York, 1988), 218.

“regulars”—also made efforts to regulate the lucrative patent medicine industry, and with it the power of pharmacists to prescribe. Concurrently, the medical orthodoxy sought to outlaw midwifery in order to gain a larger share of the valuable obstetrics market.²⁴⁶ Though the orthodox medical community did not mount an organized attack on stage hypnotism, physicians gladly did testify against itinerant hypnotists when the opportunity arose.

In 1889, Clark Bell, president of the New York chapter of the Medico-Legal Society, canvassed psychologists and physicians about cases of stage hypnotists damaging subjects, and one asserted that hypnosis was dangerous both physically and morally and inevitably would lead "to imbecility or insanity."²⁴⁷ A New York Times editorial of 1890 concluded that despite its good uses, hypnotism seemed of dubious value overall and urged the banning of stage exhibitions. The editorial characterized such stage exhibitions as "degrading" and asserted that "the exhibitor might as well be allowed to chloroform people in public in order to amuse a mixed audience with the phenomena of their narcotization."²⁴⁸ At least one American city, Cincinnati, made stage hypnotism a misdemeanor offense in 1891. This law followed the much-publicized decision of an autopsy panel in New York state that Spurgeon Young, a young African-

²⁴⁵ J.H. Cassedy, Medicine in America: A Short History (Baltimore: Johns Hopkins University Press, 1991), 91.

²⁴⁶ J.G. Burrow, Organized Medicine in the Progressive Era (Baltimore: Johns Hopkins University Press, 1977), 117.

²⁴⁷ Laurence and Perry, 270.

²⁴⁸ "Dangers of Hypnotism," New York Times, 28 December, 1890, 4.

American who worked as a hypnotist's assistant, had died of diabetes aggravated by his work as a "human plank," which involved holding enormous weights on his torso.

Efforts to reform hypnotism came less from the organized force of medical associations and more from those medical practitioners who relied on hypnotism in their practice. One of the more powerful and idiosyncratic voices in this battle belonged to Sydney Flower, owner of the Psychic Publishing Company of Chicago and publisher of Hypnotic Magazine, a monthly that ran from 1896 through 1898. The magazine was a curious amalgam—its tone at times comical, at other times high-minded and focused on the public good. It included articles from contributors such as Clark Bell about the ethics of hypnotism, reviewed the Spurgeon Young case, ran advertisements for the Medico-Legal Journal, as well as for Spiritualist journals such as Light and the Christian Metaphysician, and advertisements for various books on telepathy and psychic arts. Flower would gently advocate the reality of psychic matters, yet poke mild fun at the fringe sector of his readership with satirical poetry about vegetarianism, or in such articles as “Baldness Versus Mental Treatment,” which questioned why, if so powerful, positive thinking had never cured this ailment. Yet Flower attempted to extend his readership to the professional classes, and to gain support for his advocacy of hypnosis as a powerful therapeutic tool. Flower had the respect both of professionals such as Clark Bell and of stage hypnotists such as X. LaMotte

Sage, who remarked that Flower was "undoubtedly possessed of more than ordinary erudition and genius."²⁴⁹

Hypnotic Magazine was affiliated with a small clinic with the grand name of the Chicago School of Psychology. Flower was the school's acting secretary, and in each issue of his journal he published an account of the hypnotic treatments administered in that clinic by Dr. Herbert A. Parkyn. Parkyn would take on cases of insomnia, rheumatism, kidney disorder, deafness, bronchitis, stammering, loss of appetite, and sexual dysfunction, among others. Most frequently, the published proceedings indicated successful treatments, or remarked that not enough long-term data was available to pronounce the treatment a success or failure.

Besides providing publicity for Parkyn's clinic and his own publishing house, Flower's Hypnotic Magazine had a mission—to evangelize for hypnotism, to demystify it, and to insist that it be regulated and legally limited to physicians who could do the most good with it. In the introduction to the first issue Flower asked, "Why should the whole field of mental therapeutics be left in the hands of pseudo 'professors,' mental healers and charlatans? Surely it is the province of the duly qualified M.D. to possess himself of the facts..."²⁵⁰ Hypnotism, he argued, had acquired a bad reputation because of such unfortunate affiliations. It also had a bad reputation because of aggrandizing performers who insisted that they had

²⁴⁹ X. LaMotte Sage, Hypnotism: As It Is (Rochester: New York State Publishing Company, 1902). Not paged. Magic Castle library.

²⁵⁰ Sidney Flower, "Introduction," Hypnotic Magazine, Vol.1, no.1, August, 1896, 1.

“hypnotic powers” unavailable to others. If physicians and business men did not have the time to investigate the supposed dangers of “hypnotic influence,” Flower and his magazine would do so.

Meshing with his interest in things psychic, Flower argued in the magazine that there was indeed a close link between mind and body, and hypnotism or “suggestion” was the best way to trigger healing through this link. Hypnotism’s “value to the physician and to the psychologist cannot be estimated. It affords a means by which the power of the mind to heal the body may be manifested.”²⁵¹ The good healer evoked the patient’s own ability to heal himself or herself.

Correlating with his distaste for stage hypnotism, Flower thoroughly covered the death of hypnotic assistant Spurgeon Young in 1896, publishing many documents related to the case. Among them were letters that Clark Bell, acting on behalf of the New York State Department of Health, had requested of experts in hypnosis, medicine and neurology to determine if Young's diabetes could have been aggravated by his work as a hypnotic subject. Bell's list of correspondents, which included Sidney Flowers and several other Hypnotic Magazine contributors, suggests that this magazine was not a mere fringe effort but part of that era's network of experts on hypnotism.

²⁵¹ Sidney Flower, "'How to Hypnotize' Reviewed," Hypnotic Magazine, Vol. 1, no.5, December 1896, 284.

The answers to Bell's request covered a great range—most of the experts queried thought it unlikely that hypnosis could trigger diabetes, but they did believe that Young's work could have led to "malaise and physical prostration."²⁵² Thomson Jay Hudson, a frequent contributor to Hypnotic Magazine, replied that Young's profession and its toils would cause "but one inevitable result, namely, a shattered, nervous organism, leading, eventually, if life is prolonged, to imbecility or insanity."²⁵³ Other experts said it was conceivable that holding large weights on his abdomen could have contributed to the diabetes, but noted such a line of reasoning was quite speculative.²⁵⁴

Bell appeared at the autopsy trial and requested more time for responses to his survey. Instead, the jury accepted the expert opinion of J.D. Buck, a professor of medicine and nervous and mental disease in Cincinnati. Buck answered that "Cerebral softening and diabetes might result from repeated hypnosis."²⁵⁵ A newspaper reporter also characterized Buck's letter to the coroner as including the opinion that "every hypnotist who comes to a town should be knocked out."²⁵⁶ The jury concluded that Young had died of "diabetes and nervous exhaustion

²⁵² "The Death of Spurgeon Young," Hypnotic Magazine, Vol. 2, no. 6. June 1987, 291.

²⁵³ *Ibid.*, 293-4.

²⁵⁴ *Ibid.*, 287-306.

²⁵⁵ *Ibid.*, 302.

²⁵⁶ *Ibid.*, 301.

caused by hypnotic practices."²⁵⁷ It is likely that Buck's hatred of stage hypnotists led to the statute in Cincinnati banning stage hypnotism.

In every issue Flower published scornful accounts of stage performers, whether phony psychics or hypnotists. He found exhibitions of “window sleepers”—like those of Leonidas—distasteful, as was stage hypnotism in general. Flower quoted an issue of the Baltimore Citizen which described a hypnotist whose subject had been sleeping in a storefront theater window for more than a week, gathering large crowds of spectators on the street. Concerning such spectacles, Flower's general conclusion was: “...I wish to express my intense dislike of the induction of hypnosis for the purposes of amusement. There is no good end to be gained by the public exhibition of somnambulistic feats...It is not possible to restrict the use of hypnotism as a therapeutic agent to the medical profession, but it is possible to bar the hypnotic ‘entertainment.’”²⁵⁸

The stage hypnotists had varying responses to such calls. Many stage hypnotists, particularly those who effected cures in their offstage practice, sought the moral high ground of the perfectionist model. The influential, often-plagiarized stage hypnotist, mind reader, and healer P.H. McEwen argued against medical control of hypnotism in Hypnotism Made Plain. McEwen, who was a lay healer, insisted, "Not until doctors have proven themselves more intellectual and

²⁵⁷ Ibid., 302.

²⁵⁸ Sidney Flower, "How to Hypnotize' Reviewed," 283-4.

virtuous than their fellow men, should they be given the monopoly of one of the greatest God-given benefits to mankind."²⁵⁹

McEwen defended hypnosis in general with the argument that the subject underwent a valuable spiritual transformation when hypnotized. "When one has thus learned to control himself, or, in other words, has learned how to overcome the material body by asserting the rights of the true ego, he has accomplished much towards the development of the soul, giving to it the place to which it rightly belongs."²⁶⁰ Other stage hypnotists borrowed McEwen's defense that hypnotism revealed the soul. For example, L.A. Harraden suggested the following be worked into opening speeches: "Our object tonight is to cause the flesh and its power, the intellect and reasoning faculties, to slumber; while we thereby temporarily set free the invisible spirit which we call the ego, or soul, or the subjective mind..."²⁶¹ This rhetoric might be appropriate to acts in which the hypnotist was revealing some greater power of the subject's mind or exhibiting the subject's apparent ability to self-heal; however, such a defense could only uneasily apply to stage performances in which hypnotic subjects followed humiliating commands.

Many hypnotists staged their entire acts and never placed their subjects in trances. Reformers' calls to ban stage hypnosis on the basis that the hypnotic

²⁵⁹ P.H. McEwen, Hypnotism Made Plain (Fargo, North Dakota: The Author, 1897), 13.

²⁶⁰ *Ibid.*, 80.

²⁶¹ L.A. Harraden, Hypnotic Exhibitions (Jackson, Michigan: The author, 1900), 33.

trance damaged subjects' health must have both amused and alarmed these "fake operators." Newspaper reports in 1885 indicated how a mesmerist performing in Chicago managed such stage fakery, and also suggested that orthodox physicians of the era viewed stage hypnotists as a "problem" to solve, often using the "unmasking" of fraudulence as their chief weapon. A group of Chicago physicians had been attending hypnotist Dr. Townsend's performances at Grenier's Theatre nightly, sitting in the twenty-cent seats, fascinated. One evening, H.R. Robinson, one of the assistants – or "horses" – of Dr. Townsend, angered about not being paid, disrupted a performance, shouting, "This thing is a fraud, and I can prove it. I've been a subject here and I can stand any kind of test." Robinson later arranged for several physicians who had been attending Townsend's "seances" to test him and other assistants, showing that—when completely awake—they could be jabbed with needles under their finger nails and through their tongues, burned with lit cigars, have cayenne pepper thrown in their eyes, and made to swallow "the bitterest drugs" without reacting.²⁶²

Such revelations of fraud, which debunked the reality of the hypnotic trance and placed hypnotic subjects at the level of sideshow glass eaters and other such miracle workers, were disputed by Professor Leonidas. He insisted that while hypnotists often did use one or two professional subjects or "horses," these were people who were easily hypnotized, and extremely valuable. He urged the

²⁶² "A Mesmerist's 'Horses,'" New York Times, 26 February, 1885, 5.

would-be performer to “avoid all fake work” and to get a genuine subject, "a good subject; one who can be put into catalepsy or made to eat the delusive strawberry...and he is the boy to purchase, hire or kidnap!"²⁶³ Another hypnotist, X. LaMotte Sage, insisted that such frauds were generally only found in dime museums and were inferior to genuine subjects, adding, "no high class performer could possibly use them."²⁶⁴

Stage hypnotists also often agreed that hypnotism could damage subjects, but insisted that they were as expert at avoiding such dangers as were those with more than mock-credentials in psychology or medicine. Savvy stage hypnotists could regulate their own profession through study and practice. One hypnotist's 1896 handbook encouraged operators to combine the study of hypnotism with the then mildly-credible science of phrenology, in order to work "phreno-manipulations" on subjects. If an operator touched the area of the skull corresponding to the organ of 'Imitiveness' they could get some wonderful impressions of parrots out of the subject. But operators were warned to steer clear of the "organs of our lower nature, such as 'Amativeness,' 'Destructiveness,' 'Combativeness,' 'Fear,' & c., as their manifestations are not always of the most agreeable character."²⁶⁵ And in a 1907 pamphlet, the English stage hypnotist George White suggested that assistants should be put into "cataleptic" trances

²⁶³ Leonidas, 10.

²⁶⁴ Sage, Hypnotism: As It Is. Not paged.

²⁶⁵ William Shaw, How to Hypnotize and Mesmerize (Chicago: Author, 1896), 20-21.

sparingly. The human plank trick was especially dangerous and might lead to subjects whose "nervous systems have been completely shattered."²⁶⁶

Leonidas also warned his readers about "bad" subjects, people with constitutional weaknesses who are "usually pale" and "wobble [sic.] perceptibly" when going into a trance. "Here," he remarked, "is a case in which the inexperienced operator will feel his heart growing weak. These cases are rather frequent and must be treated 'heroically.' [sic.] that is, the subject must be brought to the waking state without delay, or—well, there might be a bit of a sensation...If left alone they might come out of the sleep in half an hour or they might sleep a week."²⁶⁷ The able hypnotist had to steer a careful course and rely on his or her own wits. Like McEwen, Leonidas thought himself more of an expert than many of the era's physicians then experimenting with hypnosis.

Leonidas's defense of hypnotism avoided the spirituality-based argument of McEwen to insist instead that hypnotism was justified because it was both entertaining and educational. Commenting that "P.T. Barnum once said that the public wants to be humbugged," Leonidas added, "They do to a certain extent. That is, they – and especially Americans – want to be entertained. They look for variety and not reform."²⁶⁸ He saw education as part of his mission, however, and comes off as a somewhat vague apostle of positive thinking—an offshoot of

²⁶⁶ George White, Personal Magnetism, Teleathy and Hypnosis (London: George Rutledge and Sons, 1907), 246.

²⁶⁷ Leonidas, 58.

mesmerism still powerful today in American culture. "True," he remarked, "the work that is seen in the average hypnotic show is not illustrative of the highest type of psychology. But it has its mission and always will have—or until people have been educated to that point wherein they can utilize the mental forces in every-day life."²⁶⁹ Leonidas, like McEwen, LaMotte, and others, sought to emphasize hypnotism as a model for “emancipation” and not one of “enslavement.” Though his primer may still persuade readers of his integrity, Leonidas's career as a hypnotist languished. In 1903, The American Mutoscope and Biograph Company released the short film "Stealing a Dinner"—designed for kinetoscopes with their flapping photographic cards—that featured Professor Leonidas, along with his troupe of trained dogs, involved in high jinks at mealtime.²⁷⁰ Clearly, this career shift suggests he never became a headliner as a hypnotist.

Progressive Entertainment or Grotesque Performance?

Stage hypnotism foundered as an entertainment form when it entered the cultural currents of the progressive era. Regulation attempts imply a rising

²⁶⁸ Ibid., 19.

²⁶⁹ Ibid., 60.

²⁷⁰ "Stealing a Dinner." (1903). American Mutoscope and Biograph Company. G.W. "Billy" Blitzer, camera. Library of Congress. Catalog no. 973. The catalog copy indicates this was not Leonidas's first film with his animal troupe. Also available online: <http://memory.loc.gov/ammem/vshtml/vsfmlst.html>

American middle class that had begun to view hypnotism more as a metaphor for enslavement than liberation. In this same era, critics frequently used the word "hypnotizing" to describe the allures of the city with its electric lighting, window displays, and consumer abundance. In this melodramatic formulation—often found in "white slavery" tracts—innocents encounter modernity, become charmed, and their virtue is severely challenged. The metaphoric implications of hypnosis were all the more reason that "degrading spectacles" be stopped.

While reformers of that era hounded stage hypnotists, some new adepts within the ranks of the progressives seized on hypnosis as an ideal tool for social reform. In 1888, a reviewer of a book titled Animal Magnetism by A. Binet and C. Fere of the Charcot school in France commented, "Much curious information is given as to the production and effects of hypnotism...The science of magnetotherapeutics is certainly still in its infancy, but if it can give us new moral agents and effect the reform of every criminal, let it be developed by all means."²⁷¹ This formula was revisited a decade later when a New York Times article from 1899, titled "Hypnotism the Cure-All," made the claim that "Hypnotism, as a means of reforming criminals and of removing crime and moral obliquity...is the latest theory which advanced science has to offer."²⁷² The article went on to discuss

²⁷¹ "Animal Magnetism," Electrical World, 28 January, 1888, 38.

²⁷² "Hypnotism the Cure-All," New York Times, 30 April, 1899, 12. Like a true progressive, the Columbia University professor highlighted in this article, D. Quackenbos, found his subjects at Charles Loring Brace's Newsboys' Lodging House in lower Manhattan. Quackenbos also co-wrote with John Duncan Hypnotism in Mental and Moral Culture (New York: Harper & Brothers, 1903).

how hypnotism could end drug addiction, moral perversions, and turn thieves into upright citizens. A volume co-written by a minister and two physicians in 1908 continued this line of reasoning. They insisted that hypnotism and auto-suggestion could be useful in treating non-organic mental disorders and to reform moral habits. Hypnotism could help re-educate and reform prostitutes, treat alcoholism, drug addictions, neurasthenia, sexual aberrations, bed-wetting, and "incorrigible children with vicious habits."²⁷³

Capitalizing as best they could on their notoriety, hypnotic showmen navigated the tricky currents of reform. McEwen, for example, wrote of his own successful efforts to cure patients of illnesses and to alleviate mental and moral disorders. He also argued that hypnotism revealed the human soul, but this argument had appealed more to the public during the earlier perfectionist era.

Dr. Bodie relied heavily on the poetic license of the showman. He positioned himself as a man of science, complete with a string of honorifics following his name, and as someone who happened to be in touch with mystic forces. While his electrical displays appeared to affirm modernity, his use of the electric chair critiqued its products. Likewise, if his stage work made his subjects into grotesques, his stage cures symbolically redeemed paralytics from their own status as grotesque displays. Though Bodie continued performing into the 1920s, his popularity was greatest before the Glasgow riots of 1909.²⁷⁴

Professor Leonidas traveled lighter than Bodie and gained fewer enemies, but ultimately abandoned the art to become the leader of a trained dog troupe—a move that clearly signals the decline of stage hypnotism. Leonidas's act, like that

²⁷³Worcester, McComb, Coriot, Religion and Medicine: The Moral Control of Nervous Disorders (New York: Moffet, Yard and Company, 1908), 138.

²⁷⁴ In a letter to Houdini, in 1913, Bodie complained bitterly when he initially was turned down for membership by the Magician's Club of London, presumably for his unsavory reputation.

of most hypnotists, could be said to provide greater sociological insights than the psychological insights he promoted: his stagecraft revealed the grotesque product that ensues when social roles are violated—i.e. when a middle-aged gentleman assumes that he has been transformed into an international opera diva named Madame Squeeba.

Hypnotists were up against more than the outrage of crusaders like Sidney Flower or Dr. Buck of Cincinnati. In the 1890s, with the advent of the Keith Circuit on the East Coast and the Orpheum Circuit in the West, vaudeville and variety entertainments were becoming less bawdy and offensive. As the vaudeville network expanded and became standardized, acts which relied on the grotesque, like those of the hypnotists, were pushed even further to the margins. Vaudeville, the leading edge of the mass entertainment industry, itself soon displaced by the film industry, was then helping to shape America's middle class.²⁷⁵

Regarded in a positive light, the progressives' battle against stage hypnotism, led by advocates of medical hypnosis such as Sydney Flower, suggests that by this era the middle class would no longer tolerate exploitation, whether of child laborers, sweatshop workers, or the hypnotic subjects symbolically exploited on stage. In a more critical light, the growing distaste for hypnotism reveals a middle class that preferred a sanitized culture in which older mysteries and marvels no longer had a place. Yet, not only middle-class guardians

of public virtue were to blame for stage hypnotism's demise but also the new mass culture forms such as vaudeville, cinema and radio. While stage magicians were far more successful at adapting to the demands of the new era, seedy performers such as stage hypnotists and such venues as dime museums were quickly vanishing.

When Leonidas encouraged would-be hypnotists to use a "window sleeper" on the small town circuits—that is, to place an entranced assistant in a coffin—he may have been unconsciously announcing the death of stage hypnotism as a viable trade. Turn of the century hypnotists had indeed symbolically "killed" their assistants—the modern hypnotist's "horse" no longer displayed the amazing powers of mind that mesmerists had once elicited from their somnambules. By exalting his own role as an "operator," Leonidas admitted that for subjects he might as well "go to the dogs."

²⁷⁵ For an examination of the development of vaudeville, its standardized nature, and its founders' attempts to create and encourage a middle class audience, see Robert W. Snyder, *The Voice of the City: Vaudeville and Popular Culture in New York* (New York: Oxford University Press, 1989).

Chapter Four: The Magician

In 1873, in Genoa, New York, townspeople saw the following poster announcing an upcoming performance: "IF NOT SPIRITS WHAT IS IT. THE MYSTERIOUS MAN WILL PERFORM THE WONDERFUL MANIFESTATIONS PRODUCED BY ALL THE NOTED MEDIUMS OF THE DAY." The poster went on to describe the performer's abilities, announcing, for example, that he "plays on several musical instruments while firmly bound with ropes" and that he "is released after being bound by a committee in less time than is taken in binding him." Using rhetoric common to séance invitations, the poster urged the audience to "Come and Investigate." Men were charged 25 cents and children and ladies 15 cents.²⁷⁶

The poster did not make clear whether the "Mysterious Man" was one of the many Spiritualist performers of the era or that breed's prime enemy: the stage magician or "anti-Spiritualist" whose goal was to prove the Spiritualist a fraud. The "Mysterious Man" occupied a low tier of the show business world where

such ambiguity could widen his appeal. Prominent magicians chose sides more precisely. To defend their prior claim to the stage, the magicians employed a two-fold strategy against newcomers in the wonder trade such as mesmerists and Spiritualists. First, they deflated the pretensions of mesmerists and Spiritualists to otherworldly powers and scientific status, and, second, they absorbed their competitors' marvels into their own magic acts.

The ensuing turf battles between the era's "anti-Spiritualist" magicians and mystic performers mirrored the larger tension in society between scientifically-minded skeptics and followers of Spiritualism. The stage magicians' decision to police the line between "genuine" and "fraudulent" stage presentations underlined their alliance with what they assumed to be progressive scientific forces.

Sociologists of science insist that working scientists inevitably must patrol the boundaries of science and expose "deviant" science or pseudo-science to maintain the integrity of their discipline.²⁷⁷ A prominent scientist such as Michael Faraday, for example, only hesitantly "exposed" table-rapping. Although he argued that it was an outcome of the unconscious muscular action of séance attendees, Faraday was unsure whether his scientific attention to the topic would only further the cause of Spiritualists. With prominent scientists hesitant, in the mid-nineteenth century, stage magicians jumped to the aid of science. Anti-Spiritualism was one

²⁷⁶ Poster for "Mysterious Man." 1873. McManus Young Collection, Library of Congress.

²⁷⁷ R..G.A. Dolby, "Reflections on Deviant Science." In Roy Wallis, ed., On the Margins of Science (Staffordshire, England: University of Keele, 1979).

of the first strategies stage magicians adopted to secure a symbiotic relationship with the scientific project and to promote themselves as exemplars of the "modern."

Yet the magicians' attempt to embrace "science" and reject "superstition" hid the deeper ambiguities in such performances. Magicians wished to offer "shows of wonder" that fulfilled the audience's nostalgia for "wonders" while yet assuring audiences that miracles, ultimately, had no place in the modern age. Further, anti-Spiritualism could be an extravagance that only the more successful performers could afford. Just as the Mysterious Man's poster makes it unclear whether he was a Spiritualist or anti-Spiritualist, many magicians either started their careers as mystic performers, or occasionally turned to such venues when desperate.

One graphic example is the career of turn-of-the-century performer Harry Houdini. His professional life recapitulated the curious kinship and hostilities that informed the relationship between Spiritualists and anti-Spiritualists. Though now perhaps the best known of the anti-Spiritualist performers, early in his career Houdini moonlighted as a fraudulent Spiritualist performer. And even when he later battled Spiritualism, taking on the mantle of science and progress, Houdini never became a comfortable symbol of the status quo. Instead, like other artists of the modernist era, he positioned himself as a rebel—an individualist whose “natural” humanity freed him from most forms of authority: whether the

encroaching regimentation and “feminization” of daily life; the powers of police and their jails; the restraints of strait-jackets; or the charlatans of the religious or occult worlds.

To further complicate matters, Houdini's beliefs about Spiritualism were as ambiguous as his attitude regarding authority. Both a seeker and a skeptic, Houdini's escape act indicated a fascination with the borderland between life and death that placed his interests close to those he mocked in his anti-Spiritualist lectures and exposés. Houdini reflected his era—a time of modernist skepticism of authority, but also a time when audiences thirsted for illusions in any form.

If Not Spirits What Is It?

The Spiritualist movement created a context in which stage illusionists of all sorts could flourish. Spiritualism was launched in 1848, when the Fox sisters in upstate New York began to hold séances in which spirits “rapped” responses to questions. Soon other houses in the area were subject to ghostly “rappings.” Spiritualist societies blossomed, and séances were held, both as a form of worship and as a money-making method for mediums to help supplicants communicate with spirits of the dead. Within a few years, thousands of mediums set up shop in the United States. The advent of the American Civil War, with its high casualty

rates, also increased business, just as the aftermath of World War One was later to revive fascination in Spiritualism.

Spiritualism also soon sprawled into show business. In the 1850s and following decades, young and pretty Spiritualist “trance speakers” such as Cora Hatch and Achsa White Sprague became the equivalent of today’s rock stars when they lectured in an inspired and purportedly unconscious state about politics and women’s rights.²⁷⁸ Soon after their initial séances, the Fox sisters presented a public séance and charged admission in Rochester; in the summer of 1850 they stayed at Barnum’s Hotel and offered séances to genteel New Yorkers, impressing, among others, Horace Greeley, publisher of the New York Tribune. Shortly after the launching of Spiritualism, the Davenport Brothers, also from upstate New York, became the most famous of all performing spiritualists. Though they never publicly stated that their mediumship was genuine, the Davenports’ act usually began with a minister solemnly explaining to the audience the value of Spiritualism to the renewal of Christian faith. In the Davenports’ cabinet act, which they launched in the 1850s and performed before Spiritualist societies, variety audiences, and royalty, a “committee” from the audience tied the brothers’ hands behind their backs and fastened their ankles. The committee bound them to a bench within a large cabinet—essentially a large wardrobe—that held suspended musical instruments. Shortly after assistants lowered the stage

lights and closed the doors of the cabinet, the audience could hear guitars, violins, bells, and tambourines playing inside. But when the doors of the cabinet were opened, the Davenport Brothers sat calmly, hands and feet tied in place.

To make their acts credible, Spiritualists often appealed to the scientific beliefs of the age. The result, for believers, was a show of wonders with a scientific aura that assured audiences that human powers were keeping pace with scientific progress. As mesmerism had some scientific cachet, prior to a séance, assistants or handlers might make mesmerizing passes before the mediums to help them reach their trance state. Spiritualists also liked to insist that they were conducting scientific experiments and asked observers, as did the Mysterious Man, to "come and investigate" and draw their own conclusions from the empirical evidence. Likewise, both mesmerists and Spiritualists insisted their wonders had some basis in electrical phenomena. At séances, for example, men and women were alternated around the table in order to balance out "negative" (female) and "positive" (male) forces. Mediums likewise urged séance goers never to "cross themselves" as this might create a short-circuit. The telegraph, which was a popular sensation when the Fox sisters began to receive their rapped messages, also provided a technological metaphor for spiritualist practice. Spiritualists insisted they were simply employing the "spiritual telegraph," giving a contemporary twist to the archaic practice of communicating with spirits.

²⁷⁸ Anne Braude, Radical Spirits: Spiritualism and Women's Rights in 19th Century America

Stage magicians, too, long had made pretenses to scientific status to deflect charges of frivolity and to promote their acts as "moral entertainment." As early as 1787, a magician named Falconi described his show in Baltimore as a series of "Natural Philosophical Experiments." Falconi emphasized the word "experiment" rather than "trick" or "illusion," and his playbill emulated the prose of a "natural philosopher"—or man of science.²⁷⁹ A Mr. Charles performing in Boston in 1819 billed himself as a ventriloquist and "professor of mechanical sciences to his Majesty the King of Prussia."²⁸⁰ And a Mr. Stanislaus who performed in Boston in 1823 described himself as a member of the Academy of Arts and Sciences in Paris and a Professor of Natural and Experimental Philosophy. His show included sleight of hand and philosophical experiments with names like "No.1 the gallant Mercury."²⁸¹ An 1837 broadside for Mr. Baldwin referred to him as "The Unrivalled American Magician, Professor of Magical Hydraulics, Metamorphoses, Scientific Ledgerdemain [sic.], &c."²⁸² Such presentations, which were common through the first half of the nineteenth century, seemed appropriate to an age when a scientific experiment generally referred to a public demonstration.

(Boston: Beacon Press, 1989), 84-98.

²⁷⁹ Handbill reproduced in Milbourne Christopher and Maurine Christopher, The Illustrated History of Magic (Portsmouth, N.H.:Heinemann, 1996), 55.

²⁸⁰ Harry Houdini, Houdini's History of Magic in Boston 1792-1915. Facsimile edition. (Glenwood, Illinois: Meyerbooks, 1983), 11.

²⁸¹ *Ibid.*, 14.

²⁸² Playbill. Steve Finer Catalogue 75, item 55. Summer 1992.

In the 1860s, New York State required magicians or "jugglers" to take out licenses to perform, and some entertainers may have posed as scientific lecturers to spare this extra expense. John H. Anderson, the son of the well-known magician Professor Anderson, described his occupation as "giving scientific lectures with mechanical experiments" when he appeared as a witness at a trial prosecuting a fraudulent Spiritualist in 1865.²⁸³ Likewise, nineteenth-century magic catalogues often included "scientific apparatus" or "philosophical apparatus" among their offerings. One prominent catalogue from 1876, for example, was titled "A New and Descriptive Catalogue of Magical Apparatus and Scientific and Mechanical Novelties."²⁸⁴

Stage magicians gained additional insights from nineteenth-century science popularizers. These writers or lecturers often defined themselves by taking a strong stance against "superstition." Such popularizers frequently relied on the device of debunking superstition or "correcting error" as a prelude to their own explanations of scientific phenomena.²⁸⁵ Magicians found that adopting a similar "anti-superstition" stance could align their craft with the progressive force of science while releasing them from the strain of imitating a scientist or natural philosopher while on stage.

²⁸³ "Spiritualism Jugglery—Curious Trial at Buffalo," *New York Times*, 27 August, 1865, 2.

²⁸⁴ "A New and Descriptive Catalogue..." Adams and Company. Boston, 1876. McManus Young Collection. Library of Congress.

²⁸⁵ See Burnham, 19-44. Burnham argued that this tactic remained strong into the early twentieth century until corporate public relations departments and journalists began to again promote superstition in the form of isolated "gee whiz" science facts.

The stage magicians' anti-superstition efforts pitted them against their stage rivals—the era's mesmerists and Spiritualists. To debunk these popular movements, magicians duplicated the effects that Spiritualists and mesmerists supposedly achieved through occult powers at séances. Magicians launched "Second Sight" acts as early as the 1830s to imitate the performances of mesmerized subjects who exhibited clairvoyance and described objects or places apparently out of view. In the 1840s, the older Professor Anderson mocked the Fox sisters, calling them "conjurers in disguise," and soon added spirit rappings to his act.²⁸⁶ Prominent stage magicians Harry Kellar and John Nevil Maskelyne both debuted as debunkers of the Davenports' cabinet act. Maskelyne and his partner George Cooke launched their duplication of the Davenports in 1865, shortly after the Davenports first visited England. The entertainers added a few humorous touches, as when the cabinet doors were opened and the shackled magicians had transformed themselves into an ape and a lady. Maskelyne and Cooke also introduced Spiritualist stage farces at their London theater, Egyptian Hall. Similar farces soon appeared in magic catalogues, with titles such as "'Spooks' or the Spiritual Cook,"²⁸⁷ or "Lady Daffodil Downy's Séance," an

²⁸⁶ Christopher, 118-20.

²⁸⁷ "Sid Macaire's Descriptive Catalogue of Entirely New and Superior Wonders..." Chicago. Circa 1885. McManus Young Collection. Library of Congress.

"excellent anti-Spiritualist farce for three or more persons, as introduced in London by Maskelyne and Cook."²⁸⁸

Yet the conflict between magicians and Spiritualists hid deeper ambiguities. The poster of a performer like the Mysterious Man of the 1870s obscured whether he was a Spiritualist or anti-Spiritualist. A similar performer named George Everett, offering Spiritualist-styled escapes from ropes was denounced as a fraud in 1878 and responded that he made no claim to Spiritualism or any other "ism," but simply "gave what he had acquired in his own investigations and the public must judge as it saw fit."²⁸⁹ Meanwhile a Spiritualist performer such as Professor LaRoy Sunderland offered a show that included "original experiments in Mental Magic, Musical, Wonderful, Mirthful, demonstrating new discoveries in psychology and other 'ologies."²⁹⁰ The decision to define oneself as Spiritualist, anti-Spiritualist, or in-between likely had less to do with ethics than with box-office concerns.

Despite their public conflict, throughout this period magicians, Spiritualist performers, and anti-Spiritualists purchased their tricks and cabinets from the same catalogues. From the mid-1800s, the catalogues of shops that sold magical devices to performers frequently devoted pages to "anti-spiritualistic devices,"

²⁸⁸ "Burlingame Catalogue." Chicago, circa 1887. McManus Young Collection. Library of Congress.

²⁸⁹ Houdini, *A History*, 88.

²⁹⁰ *Ibid.*, 36, 42. This was either the prominent Spiritualist LaRoy Sunderland, or an imitator. The "real" Sunderland was on record disapproving the sensationalizing of Spiritualism. See R. Laurence Moore, *In Search of White Crows* (New York: Oxford University Press, 1977), 17.

such as the "Spirit Bell," "Rising Tables," "Rapping Hand," "Luminous Materialistic Ghosts and Forms," and "Magic Slates." The catalogues also offered entire acts such as "Etherialization"—which enabled a medium “to produce any number of spirit forms, in the perfect dark, which have the appearance of a fine, misty, luminous vapor...fading away, producing a weird and wonderful effect.”²⁹¹ Hands that could rap out messages were also available, as well as the "New Flying Music Box," "Slate Tricks," and "Spirit Lectures," "meant to [be] use[d] in combating spiritualism, or by anti-spiritualists. Are suitable for delivery from the stage, parlor or pulpit.”²⁹²

Some catalogues specifically targeted fraudulent performers. To take a late example, the copy of a Depression-era magic catalogue entry for "Distant Hypnotic and Magnetic Force" ran, "Actually convinces the suckers that you do possess some strange force.”²⁹³ More reputable dealers avoided such direct appeals to fraud and insisted that Spiritualist effects and devices were intended for the entertainment of friends in the parlor only. The fact that magic catalogues labeled their Spiritualist devices "anti-Spiritualist" underlines the ambiguities of such divisions. With the aid of the same technology, magicians and spiritualist frauds were able to carry on their ongoing cat and mouse game. Self-proclaimed

²⁹¹ W.D. Leroy, "New Descriptive Catalogue...Anti-Spiritualistic Illusions." Boston, 1893. McManus Young Collection. Library of Congress.

²⁹² Adams and Company, "A New and Descriptive Catalogue of Magical Apparatus." Boston, 1876. McManus Young Collection. Library of Congress.

²⁹³ "W.G. Magnuson catalogue," 1938. McManus Young Collection. Library of Congress.

Spiritualists used the equipment to defraud audiences, while magicians used the same equipment to become champions of rationality.

The Strenuous Life of Harry Houdini

Although Harry Houdini came to prominence as an escape artist and later as an anti-Spiritualist crusader, he began his career in the more ambiguous realm of the mystic performer. In the 1880s and 1890s, young Houdini attended many séances in New York City, eager for marvels, but reported constant disappointment at the obvious trickery and greed he and his friends uncovered. Nevertheless, before establishing himself as an escape artist, Houdini occasionally relied on the ambiguities of "anti-spiritualistic devices" and routines. Between bookings as a magician, Houdini and his wife conducted phony séances in the Midwest. His séances included such phenomena as floating tables, self-playing accordions, and the appearance of spirit faces. He also gave advice and messages to the bereaved. He relied, in short, on the products of what he and others later would call "spook racketeers."

Houdini was able to leave these days behind when he forged a new career as an escape specialist and became billed the "Handcuff King," as early as 1899.

Many of Houdini's escapes were deftly related to Spiritualistic practices.²⁹⁴ His escapes almost always took place in small curtained areas on the stage or in wooden cabinets like those of the Spiritualists. Spiritualist mediums had first introduced cabinets as a way to isolate themselves and prove that they were not working with confederates in pitch-dark séance parlors. Mediums also claimed that the dark cabinet helped them build up the spirit forces necessary for manifestations. A Spiritualist character in one of believer Arthur Conan Doyle's novels explained that the cabinet "serves as a reservoir and condensing place for the ectoplasmic vapour from the medium, which would otherwise diffuse over the room."²⁹⁵ The cabinet, as even Conan Doyle acknowledged, also opened up new possibilities for trickery.

Like the Davenports, Houdini relied on the Spiritualist's cabinet as his basic stage property. In the feat that first got him started, "Metamorphosis," Houdini had his hands tied behind his back, and then was draped in a coat borrowed from a spectator. He then climbed into a sack in a trunk. The sack was tied, its knots sealed, and the trunk shut and also bound in ropes. Then the trunk was placed in a cabinet. His assistant, usually his wife Bess, rushed into the cabinet, clapped three times and Houdini sprang out on stage. His wife was then found bound in the trunk, with her hands tied behind her back and the borrowed

²⁹⁴ Kenneth Silverman first made this point in his biography, *Houdini!* (New York: Harper Collins, 1996), 36-44.

²⁹⁵ Arthur Conan Doyle, *Professor Challenger Stories; The Land of the Mist* (London: John Murray, 1958), 363.

coat on her. This lightning exchange amazed audiences. Houdini's other escape acts were also inspired by the Davenports and other Spiritualists—or "anti-Spiritualists"—who insisted on having their hands and feet tied or locked or who had themselves bound in sacks and nailed to floors to convince audiences that no trickery was involved.

Though not the originator of handcuff escapes, Houdini certainly brought this act to prominence. Magic catalogues of the late nineteenth century—when Houdini was just beginning his career—were full of devices in which anti-Spiritualist performers could be tied up, chained or bound. These catalogues sold the secrets to trick knots, as well as handcuffs, "spirit collars" that came with padlocks, "spirit benches" which performers could be locked to, and medieval stocks in which a performer's head and hands could be secured. After Houdini rose to prominence catalogues added numerous listings specifically for handcuffs.

Houdini's mastery of Spiritualist handcuff escapes—or his "Handcuff Challenge"—helped edge him onto the vaudeville circuit. To prove that the handcuffs he escaped from were genuine, Houdini published invitations for spectators to bring handcuffs—as long as they weren't doctored—to theaters where he was appearing and lock him up. Legend has it that after vaudeville booker Martin Beck saw the Houdinis perform in a Midwest dime museum, he arranged a challenge and was impressed at Houdini's easy escape. Beck then booked the young escape artist on the Orpheum circuit of western vaudeville theaters, giving

Houdini his first taste of success. Soon he was not only freeing himself from handcuffs, but also liberating himself when sealed in a milkcan full of milk, when manacled, boxed and thrown in a river, when chained inside the body of a “sea monster” dredged up by Cape Cod fishermen, or when hanging upside down in a strait jacket from the top of a building.

Houdini's escape act, particularly the simple Handcuff Challenge, had subversive potential, as it identified him with criminals and law-breakers. Houdini often publicized his handcuff challenge by visiting the police stations of local towns and challenging jailers to keep him locked up. They usually complied, and handcuffed him and locked him in a cell. He would soon walk out free, to the delight of reporters. A typed 1905 testimonial from the Rochester New York Chief of Police is typical: "We, the undersigned, certify that we saw Harry Houdini, the bearer of this note, stripped naked, searched, locked in one of the cells...handcuffed with three paris [sic] of cuffs; also strapped with a strap extending from pari [sic] of cuffs and buckled at the back...."²⁹⁶ Such escapes appealed to a public disgusted at the corruption represented in civic authority at the century's turn. Endless muckraking exposés of the era revealed police graft, brutality and complicity in prostitution and racketeering.

This was not news to Houdini. He kept a file of clippings from English and American newspapers titled "Police," which describe acts of police

²⁹⁶ Houdini Collection, Box 11, HRHRC.

crookedness, misconduct, false imprisonment, and brutality. Cops as robbers was a favorite theme. For example his 1912 clipping from the New York Evening Telegram is headlined, "Held, Accused of Robbing Garage While Policeman." Clippings from 1913 include such articles as: "Action Against a Police Inspector—Damages Awarded" and "Two Policemen Accused of Night Robberies." Some of the clippings are light-hearted, for example a story which describes how "two members of the [Bristol] city police force ...[were] charged with breaking into a bakery, and stealing a sponge cake, value one penny." More ominous is a 1912 front page cartoon from the New York Evening Journal, showing a line of huge, headless policemen holding clubs, with the word BLACKMAIL over their heads. A body lies on the ground behind them, with the sign "A Dead Man Tells No Tales" on it, while a small figure of Justice before them is ignored.²⁹⁷

Houdini's ability to escape prison and stroll out to the street fully clothed, a free man who even had spared himself lawyer's fees, had great emotional value.²⁹⁸ In identifying himself with lock-pickers, jail-breakers, and other thieves, Houdini took on the aura of the heroic anti-hero appropriate to the age of the muckrakers. He confronted not only the police and the apparatus of the state but

²⁹⁷ "Police" folder. Harry Ransom Humanities Research Center. Houdini Collection, cabinet 112, HRHRC.

²⁹⁸ John Kasson has argued that the jail escape, which often began with an invasive medical examination of Houdini's naked body, including a prodding of his orifices, cast Houdini's eventual triumph as an act of reclaiming his masculinity. See John Kasson, Houdini, Tarzan, and the Perfect Man (New York: Hill and Wang, 2001).

also the psychiatric profession when he began to perform strait jacket escapes. His brother, Hardeen, also an escape artist, had discovered that this act was more effective when performed writhing on the stage—rather than when hidden in his cabinet.

Historians generally suggest that the nineteenth-century cult of the strenuous life was based on white male fears that modern life was overly-regimented, effeminizing men and making them into slaves of technology and bureaucracy. This cult stressed exercise, sports, fitness and asceticism. Self-liberator Houdini was one of the cult's exemplars.²⁹⁹ Houdini showed off his physique, conditioning, ingenuity, and bravery in his escapes on stage, and these qualities were highlighted in his many publicity photos, and in dime novel accounts of his exploits. Such tricks as his strait jacket escape made it clear that often there was no "trick" coming to his aid besides his strength, dexterity, and cunning. This emphasis set Houdini more firmly in the currents of his age, and, ironically, further guaranteed that his escapades would take on the aura of myth.

Houdini's advocacy of manly fitness and his desire for publicity made for a playful confrontation with London feminists. In 1908 Houdini responded to—or, more likely, choreographed—a public dare from London's suffragettes, whose printed "challenge" complained that "so far, only men have tried to fasten you."

²⁹⁹ Kenneth Silverman linked Houdini to the cult of the rigorous life in Houdini, 36-44. Kasson relied on the same insight as the starting premise for his more elaborate examination in Houdini, Tarzan, and the Perfect Man.

Relying on tools of the domestic sphere, his six female challengers promised to bind him “to a mattress with sheets and bandages.” An early biographer solemnly remarked, “He regarded this as one of his most difficult escapes.”³⁰⁰

If There Is Anything in this Belief in Spiritism

The thin boundary separating the anti-Spiritualist from the Spiritualist performer bewildered many. Despite Houdini's insistence to the contrary, Spiritualists tended to believe the magician was one of them. How else explain his ability, demonstrated on a New York stage, to walk through a freshly built brick wall? Though the trick involved a trap door, many Spiritualists suspected he had the superhuman ability to “dematerialize” and reappear. His escapes also seemed to involve similar supernatural powers, and his frequent attendance at séances implied some unclear fascination with the spirit realm. Many Spiritualist believers claimed Houdini as one of their own.

In his autobiographical account, *A Magician Among the Spirits* (1924), Houdini toyed with this interpretation when he admitted that on a boy's prompting he once had made it rain and then stop on command. Houdini's wife also ambiguously raised the possibility that psychic powers aided Houdini's escapes in

³⁰⁰ Walter S. Gibson, *The Original Houdini Scrapbook* (New York: Sterling Publishing, 1976), 39. One challenge that might elude any cultural analysis came from the Hogan Envelope Company of Chicago, as follows, “We believe a giant envelope can be made by us which will enclose Houdini and successfully prevent his escape.” Gibson, 32.

a letter she penned to his former friend, Spiritualist Arthur Conan Doyle. She wrote: "As I often told Lady Doyle, often he would get a difficult lock, I stood by the cabinet and would hear him say, 'this is beyond me' and after many minutes when the audience became restless, I nervously would say, 'Harry, if there is anything in this belief in Spiritism, —why don't you call on them to assist you' and before many minutes had passed Houdini had mastered the lock. We never attributed this to psychic help."³⁰¹

Houdini's reliance on the Spiritualist cabinet as an escape prop also might have resonated with the Jewish liturgy he witnessed as a child. Houdini's father Mayer Samuel Weiss had been a rabbi, and as a rabbi's son, Houdini would have sat front row at many services watching his father open a wooden ark to carry out the Torah, then remove the Torah's covering and ornamentation before it was unrolled and prayers chanted. Arguably, Houdini's act had religious reverberations for himself and his audiences. In such a reading, Houdini would substitute his own body for the holy Torah and his magic cabinet then would become a place of true miracles. And, although his father, with his Old World ways, lost his congregation and stature in America soon after his arrival and eventually was reduced to the role of an impoverished garment worker in New York City, Houdini was able to reclaim center stage with his own career and enactment of miracles.

³⁰¹ Beatrice Houdini to Arthur Conan Doyle, 16 December, 1926. HRHRC.

A recent writer, Rogan P. Taylor, has argued that Houdini's popularity resulted from his shamanistic aura.³⁰² Taylor identified the stage magic show as a descendent of the shaman's healing ritual. In the context of shamanism, the nineteenth-century stage magician's popular trick of decapitating a subject's head and restoring it, or the more recent variant of sawing a woman in half and then restoring her to life takes on a new resonance. Houdini's escapes from chains and ropes are also suggestive of the shaman's ability to escape this world and travel in another. Taylor argued, somewhat vaguely, that Houdini's performances, like that of a shaman, unleashed healing forces in his audiences. Houdini's strong following among the working class also suggests that his audience saw his act as a metaphor for freedom from exploitation. However, one does not have to insist that Houdini was functioning as a shaman, rabbi, or Marxist educator to agree that his performances with their symbols of liberation had a mythic resonance.

The theme of death and resurrection, or survival of the soul, crucial to Spiritualism, more sharply emerged in Houdini's act after his mother's death. Even before his father's death when Houdini was eighteen, Houdini's mother Cecilia Weiss was at the family's center. Houdini in particular doted on her. Throughout his life, Houdini liked to rest his head against his mother's breast to listen to her calming heart beat. When news of her death arrived as he was performing in Copenhagen in 1913, Houdini fainted. After returning to America,

³⁰² See Rogan P. Taylor, *The Death and Resurrection Show* (London: Anthony Blond, 1985), 144

Houdini suffered a breakdown, and spent days and nights lying on his mother's grave, his thoughts turned to death and suicide. When he resumed touring, he would spend his off-hours in cemeteries, fascinated by the graves of suicides. He also toured lunatic asylums, as one biographer put it, "morbidly convinced that he would end his days in one."³⁰³

After his mother's death, coffins appeared in his act—one of which he was later buried in. In 1916, a few years after his mother's death, as an experiment, in a field outside Santa Ana, California, he had his assistants dig a grave. Houdini climbed in and lay down, slightly hunched to give him room to maneuver. His assistants then shoveled dirt down until he was completely covered. He struggled with the weight of the earth and nearly suffocated before his assistants saw his hands break the surface, frantically clawing, and so pulled him out.

Houdini's interest in coffins and graves was rekindled in 1925, when Rahman Bey, the "Egyptian Miracle Worker," came to New York and garnered headlines with his strange stunts. After going into a trance, Bey was sealed in an airtight coffin for ten minutes. Doctors claimed the coffin only contained enough air to sustain a person for three minutes. Next Bey arranged to have a coffin lowered into a swimming pool, and remained inside it for an hour. These miracles were credited to Bey's trance powers. Houdini, then 51 years old, couldn't stand

154.

³⁰³ Raymund Fitzsimons, Death and the Magician: The Mystery of Houdini (New York: Atheneum, 1981), 98.

the headline competition. He arranged to duplicate the stunt. Houdini stayed submerged in a coffin for an hour and a half in a swimming pool and showed that conditioning and ingenuity could surpass Bey's alleged mystical powers.

Following his mother's death, Houdini again began to consult Spiritualists, hoping to receive word from her. Bess Houdini remarked that, "Often in the night I would waken and hear him say, 'Mama, are you here?' and how sadly he would fall back on the pillow and sigh with disappointment."³⁰⁴ Houdini's interest in Spiritualism, however personal its basis, was also well-timed to keep the aging escape artist's name in the public realm. The aftermath of World War One led to a resurgence of interest in séances and attempts to contact the dead. In the 1920s, during a long performance run in England, Houdini befriended one of Spiritualism's great champions, Sherlock Holmes's creator Sir Arthur Conan Doyle. According to most accounts, Conan Doyle, led to Spiritualism after the death of his son in World War I, was a true believer, whom fraudulent mediums easily fooled. Claiming he had an open mind on the subject, Houdini attended his first séances in England with the help of Conan Doyle. Houdini's fourth venture into film-making, *The Man from Beyond* (1922), included some Spiritualist influences and a nod to the writings of his friend.

In *The Man from Beyond*, Houdini plays a seal hunter lost at sea and frozen into the Arctic ice in 1820, whose body is found and revived in 1920 by

³⁰⁴ Beatrice Houdini to Arthur Conan Doyle, 16 December, 1926. HRHRC.

the scientist Dr. Strange. The explorer breaks up the wedding of the scientist's daughter and is desperate to marry her because she looks exactly like his fiancée of a century earlier. Her enraged father locks him up in a lunatic asylum. After grappling with mad scientists and a variety of restraints, the film ends with the hero and his young love at peace, while a "ghostly" superimposed image of the sealer's nineteenth-century fiancée eases into Felice Strange's body. As this miracle occurs, the camera cuts to a book Felice is reading, Conan Doyle's *The Vital Message*, and the quote, "The great teachers of the earth—Zoroaster down to Moses and Christ...have taught the immortality and progression of the soul."³⁰⁵

A séance was at the heart of Houdini's eventual split from Conan Doyle and from the Spiritualist community. Houdini and his wife joined Conan Doyle and his family in Atlantic City in the summer of 1922, and during a séance in the writer's hotel room, Conan Doyle's wife contacted Houdini's beloved and dead mother Cecilia Weiss, and recorded her pronouncements in a bout of automatic writing. The fifteen-page transcript included, "God bless you, too, Sir Arthur, for what you are doing for us—for us, over here—who so need to get in touch with our beloved ones on the earth plane."³⁰⁶ The Doyles were quite pleased with the results and Sir Arthur later noted that Houdini had been visibly shaken and moved. Conan Doyle's wife surely meant well, but Houdini seethed. His "mother's" elocution seemed oddly formal to him; he also claimed she should

³⁰⁵ Kenneth Silverman, 263-4.

have spoken in German, not English, which she didn't know; likewise, the content of her message didn't include any revealing personal references; further, Houdini had chosen his mother's birthday for the séance, and he felt "If it had been my dear mother's Spirit communicating a message, she, knowing her birthday was my most holy holiday, surely would have commented on it."³⁰⁷

When Conan Doyle returned for his second lecture tour of America in 1923, Houdini finally began to air his skepticism about Spiritualism and about the Atlantic City séance as well. Soon the two friends were exchanging angry retorts via the New York Times letters page, at turns denouncing and upholding both Spiritualism and each other. The newspaper war continued throughout Conan Doyle's lecture tour, aiding their mutual needs for publicity, but ending any semblance of a friendship. Houdini's book, A Magician Among the Spirits (1924), a long exposé of Spiritualist frauds, continually pointed to Conan Doyle's credulity. The title page of Conan Doyle's copy of Houdini's book has this comment from Conan Doyle: "A malicious book, full of every sort of misrepresentation." In his marginal comments, Conan Doyle frequently used the words "bosh!" and "rubbish!"³⁰⁸

Conan Doyle was particularly disturbed that Houdini's skepticism was limitless. He noted that Houdini never explained what would be credible

³⁰⁶ Houdini, A Magician Among the Spirits (New York: Harper and Brothers, 1924), 154.

³⁰⁷ *Ibid.*, 152.

evidence. In his autobiography, Houdini wrote, “were I at a seance and not able to explain what transpired it would not necessarily be an acknowledgment that I believed it to be genuine Spiritualism.”³⁰⁹ Conan Doyle added the exasperated marginal note, “This really means that nothing could convince him.”

The Medium Stripped Bare by Her Bachelors, Even

If Houdini briefly had lapsed into the role of earnest seeker, after the break with Conan Doyle, he became an enemy of all Spiritualists. Houdini commented in a 1925 article in the New York American, "There's a regular tidal wave going around the world. There should be a law passed that anyone pretending to be able to communicate with the spirits ought to prove it before a qualified committee."³¹⁰ In fact, Boston, Chicago, and several other cities did pass anti-fortune telling laws, and officials often included séances within the jurisdiction of such laws. Houdini pushed New York congressman Sol Bloom to propose a similar law for Washington, D.C. When the law was considered in 1926, Houdini testified before a congressional sub-committee. Despite Houdini's colorful confrontations with the Spiritualists in the audience, the bill never went beyond draft form.

³⁰⁸ The copy of A Magician Among the Spirits in the Sir Arthur Conan Doyle collection at the Humanities Research Center is full of Conan Doyle's—sometimes lengthy—marginal comments.

³⁰⁹ Houdini, A Magician, 247.

³¹⁰ New York American, August 15, 1925. Humanities Research Center, Houdini Collection, Box 11.

Arguing, as had dozens of magicians before him, that it took a skilled trickster to spot another skilled trickster, Houdini insinuated himself into the public eye as a writer of articles denouncing spiritualists in Popular Science Monthly, Scientific American, and daily newspapers. He also gave lecture tours debunking fraudulent Spiritualists and served on committees investigating—and ultimately rejecting as phonies—Spiritualists who wished to claim prizes for their genuine abilities—often mediums who had previously been approved by more gullible men of science and business. Houdini also incorporated medium-busting in his stage acts. As with the nineteenth-century efforts of Robert-Houdin, Kellar, and Maskelyne to reproduce occult effects by natural means, Houdini helped re-establish the magician's critique of Spiritualist fervor. And in a parallel to his earlier escape acts, Houdini was now metaphorically freeing the public from the bondage of superstition.

The efforts of Houdini and other stage magicians to either replicate Spiritualist effects or unmask them also had a misogynistic aspect, in keeping with fears of the "effeminization" of daily life in the progressive era. Mediums tended to be women, and their workplaces often were their home parlors, the only place of power that society then accorded them. The press depicted the typical Spiritualist society member as female, past her prime and laughable. An 1893 cartoon featuring Maskelyne shows him in one corner strangling a serpent labeled 'humbug' with the subtitle: *He is rough on Spiritualists*. Further down some

matronly women surround the conjurer above the subtitle: *The Ladies of the Spiritualistic Societies Will Persist in Claiming Him as One of their Own*. One of the matrons says, "Why should you not own that you are a medium?" As in this cartoon, journalists tended to treat stage magicians as virile, top-hatted gentlemen while depicting Spiritualists as matronly, superstitious women—or effeminate men—prone to "intuitions" and to romantic but wrong-headed views of the world.

Houdini went to great lengths to strip mediums of respectability. His most publicized nemesis was the Boston medium Mina Stinson Crandon. In the 1920s, few popular mediums were willing to brave a Scientific American panel that included Houdini, magazine editors and several Harvard scientists. The magazine was offering \$2,500 to any medium who could prove genuine psychic powers. Those who tried were "busted" by Houdini and subjected to public humiliation by pamphlet. On Conan Doyle's recommendation, the committee agreed to look at the work of Mina Crandon, called "Margery" to protect her anonymity.

Mina Crandon was the wife of a well-to-do Boston surgeon, Le Roi Crandon, and twenty-seven years his junior. By most accounts she was quite attractive. She was blonde, had blue eyes, a good figure, and was amusing and playful. She wore a silk gown during séances. According to her husband's records, during one séance, her breast began to glow with some mysterious substance, and afterwards she insisted that one of the male séance attendees study her breast for his séance notes. Sexual energy, important to the charismatic appeal of preachers like Aimee Semple MacPherson in this same era, undoubtedly added to Mina Crandon's allure.

The spirit helper she relied on, her deceased brother Walter, was rude, foul-mouthed, and temperamental. Conan Doyle noted that such lower-class license was common in channeled spirits. Such personas delighted the somewhat stultified, middle-class séance attendees, and provided a way for mediums to release frustrations. Mina's husband, Le Roi Crandon, described his wife's helper as follows, "As Walter says he (W) is no 'little sunbeam' or 'gladiola' but a full grown man who 'wears a 11½ shoe on a supernormal foot.'"³¹¹

Neither was Le Roi Crandon a 'little sunbeam.' This wealthy Boston surgeon was arrogant and dismissive. Writing to Conan Doyle, he commented, "the minute the materialistic and coldly scientific paper such as the Scientific American opens its more or less respectable doors to admit the validity of psychic phenomena the whole matter at once assumes a kind of respectability for many of the morons who inhabit the Main Street of America."³¹² Constantly seeking Conan Doyle's approval, Crandon lambasted Houdini's A Magician Among the Spirits and wrote to the British author, "My deep regret is that this low-minded Jew has any claim on the word American."³¹³ In another letter Crandon fawned over Conan Doyle, insisting that "All the faithful over here look on you as the great leader of this present world movement."³¹⁴

Crandon also was, to say the least, protective of his wife, whom he called "Psyche." After explaining to Conan Doyle how he had required all the Scientific American panelists to submit their notes to him after each séance, he added, "if they ever make any announcement not consistent with these notes you can readily see I have the material to crucify them. We are not wasting any time in

³¹¹ Crandon to Conan Doyle, 30 July, 1924. HRHRC.

³¹² Crandon to Conan Doyle, 2 May, 1924. HRHRC.

³¹³ Crandon to Conan Doyle, 13 May, 1924. HRHRC.

³¹⁴ Crandon to Conan Doyle, 22 September, 1924. HRHRC.

compliments or politeness. It is war to the finish and they know I shall not hesitate to treat them surgically if necessary.”³¹⁵

Le Roi Crandon refused to take time off from his medical practice or to let his wife travel alone to New York City for the Scientific American tests. Instead he urged the New York members of the panel to stay in Boston at his expense. While Houdini was off touring, the other Scientific American panel members became appreciative spectators at Mina’s séances. In addition to Houdini, the panel included Boston engineer David Comstock, the somewhat skeptically minded psychic researcher Walter Franklin Prince, the less skeptically minded Hereward Carrington, and William McDougall, a Harvard psychologist with a taste for Spiritualism. Soon they were under the sway of their charming hosts. J. Malcolm Bird, the panel’s secretary and an associate editor of the Scientific American, wished to award the prize to her. He was a fervent believer in her abilities. Bird’s interest in Mina Crandon may have involved more than simple admiration of her psychic powers. During séances, attendees often joined hands and sat in a circle at a table with the medium. Psychic investigators, when attending, usually flanked the medium to “control” his or her hands and feet (by holding or touching them) and so spot trickery. During the Scientific American trial séances, Le Roi Crandon sat to the medium's right and held her right hand, while one of the other panel members held her left. Throughout most of the test séances, Bird arranged to stand and control the right link (placing his hand

³¹⁵ Crandon to Conan Doyle, 6 June, 1924. HRHRC.

simultaneously on Le Roi Crandon's and Mina's) while his left hand was at liberty, as one Houdini partisan remarked, "to roam." Le Roi Crandon and, most likely, Bird were colluding with Margery by the time Houdini joined the circle. Soon after Houdini's arrival, the panel agreed to dismiss Bird for collusion.³¹⁶

No love was lost between Houdini and the Crandons. Crandon wrote to Conan Doyle, "Houdini is apparently all that you and other gentlemen have ever said of him, to which I shall be pleased to add a choice collection of adjectives."³¹⁷ Séances with Houdini were held in late July and in late August 1924. During the tests the spirit of Walter, speaking in the dark, swore at Houdini, accusing him of sabotaging an electric bell-ringing apparatus and of placing a folding ruler in a cabinet Margery was locked in. Walter thundered, "What did you do that for, Houdini? You God damned son of a bitch. You cad you. There's a ruler in this b[c]abinet, you unspeakable cad. You won't live forever Houdini, you've got to die. I put a curse on you now that will follow you every day until you die."³¹⁸ This was hardly the comic relief that séance attendees might have desired from the colorful Walter.

Houdini also came into conflict with another of the Scientific American panelists, Harvard psychology professor William McDougall, a psychic researcher, and an ardent champion of a romantic brand of psychology much like

³¹⁶ J. Malcolm Bird, Margery the Medium (Boston: Small, Maynard and Company, 1925) is an ardent defense of Margery and her psychic abilities. Bird out-bid Houdini in the pamphlet game, when he wrote this approximately 500-page long work.

³¹⁷ Crandon to Conan Doyle, 30 July, 1924. HRHRC.

that of his predecessor at Harvard, William James. McDougall viewed the rising mechanistic school of psychology, eventually to be embodied in Behaviorism, as a threat to his worldview, which included the notions of the reality of both the human soul and of free will. Though not prepared to endorse Margery, McDougall questioned the integrity of Houdini's eventual exposé of Margery. Houdini responded to McDougall with ridicule. The Boston Herald ran a photograph of Houdini holding bonds worth \$10,000. \$5,000 would be given to the Crandons if he could not duplicate all their séance effects, and another \$5,000 "To a Harvard professor if he will consent to be thrown into the river nailed in a packing case."³¹⁹

Houdini undoubtedly was in Boston to discredit Margery, and not to crown a genuine medium. One of Houdini's colleagues, magician Joseph Dunninger, was later to note that when Houdini was certain someone was a fraud or a threat to his authority, he would find a way to destroy their credibility, with or without proof of fraudulence.³²⁰ The Crandons' malice made the job easier. Houdini approached his work with zeal. His pamphlet, Houdini Exposes the tricks Used by Boston Medium "Margery" to win the \$2500 prize offered by the Scientific American, describes some of the rigors he underwent in order to reveal her frauds. One of "Walter's" tricks was to depress a button on a box that then

³¹⁸ Crandon to Conan Doyle, 26 August, 1924. HRHRC.

³¹⁹ Boston Herald, 31 December, 1924. Library of Congress, American Memory website, "The American Variety Stage." Item 65 of 137.

completed an electric circuit to ring a bell. The other panelists believed that Margery kept her feet far from the box when the bell rang in the dark under the séance table. Houdini thought otherwise and prepared with a fetishist's taste for pain and detail: "Anticipating the sort of work I would have to do in detecting the movements of her foot I had rolled my right trouser leg up above just below my knee. All that day I had worn a silk rubber bandage around that leg just below the knee. By night the part of the leg below the bandage had become swollen and painfully tender, thus giving me a much keener sense of feeling and making it easier to notice the slightest sliding of Mrs. Crandon's ankle or flexing of her muscles."³²¹

Houdini remarked that for the séance she "wore silk stockings and during the séance had her skirts pulled well up above her knees." And when he did feel her foot moving in the darkness, the moment of recognition had a conceivably erotic charge. "I could distinctly feel her ankle slowly and spasmodically sliding as it pressed against mine." Houdini's thrill during this game of footsie was at the very least that of a hunter who had finally caught his prey. The pain that he had submitted himself to helped to guarantee this pleasure. Although Crandon later referred to Houdini's pamphlet and articles as "sewage," the magician succeeded in discrediting Margery. The prize, almost hers, was denied. "Walter" got in one

³²⁰ Joseph Dunninger, Dunninger's Secrets (Secaucus, N.J.: Lyle Stuart, 1974), 243.

³²¹ Harry Houdini, Houdini Exposes the Tricks... (New York, 1924), 6. Humanities Research Center, Box 11.

last dig at a séance held on October 4 that year, when he remarked, to the amusement of the Crandon circle, “Say, write a letter to H- [Houdini] as follows: We have read your fiction with interest. W- [Walter] says to give you his love and that he will see you BEFORE LONG. He will have tea nice and hot for you and also a long fork.”³²²

Houdini Lives!

In the two remaining years of his life, Houdini fulfilled his dream of travelling with a large-scale magic show. His tour revealed both his fascination with magicians of the past and with Spiritualism. A Houdini night of magic at the Shubert Princess Theatre in Chicago for 1925 included large stage illusions in the first act, escapes in the second act, and a third act dedicated to the exposure of the tricks of fraudulent mediums. The stage illusions relied on historic apparatus he had purchased. The second act included his meal tickets: Metamorphosis, his Needle Swallowing Trick, and his latest escape, the Chinese Water Torture trick, in which he was bound in wooden hasps, manacled and suspended upside down in a water tank. The final act was based on his anti-Spiritualist lecture tour. Under the sub-heading of "Do The Dead Come Back?", his program noted, "He is not a skeptic and respects genuine believers. He does not say that there is no such thing,

³²² Crandon to Conan Doyle, 24 October, 1924. HRHRC.

but that he has never met a genuine medium." The program also included Houdini's \$10,000 Challenge, "open to any medium in the world (male or female). He will wage the above-mentioned sum, the money to go to charity, if the spiritualists will produce a medium presenting any physical phenomena that he cannot reproduce or explain by natural means."³²³ Perhaps reflecting frustrations with hecklers he'd faced during his lecture tours, the playbill included the notice, "...At no time, however, will he discuss the Bible, or Biblical quotations, before the audience."

While no medium ever collected on Houdini's \$10,000 challenge, a challenger of a different sort proved his undoing. In 1926, when Houdini brought his show to Canada, several McGill University students visited him backstage in Montreal. One of the students, Wallace Whitehead, subjected Houdini to a grilling. He first tested Houdini's publicized skill of being able to predict the plot of an entire mystery novel, if only given a summary of events from the first few pages. He next asked Houdini "his opinion of the miracles expressed in the Bible, and looked taken aback when Houdini declined to comment on 'matters of this nature.'"³²⁴ And while Houdini lay on his side on a couch, nursing an ankle he had recently broken performing the Chinese Water Torture, Whitehead asked if it was true that the performer could withstand hard punches to the abdomen. Before Houdini could rise to his feet, Whitehead began to viciously punch him. The

³²³ Playbill. Houdini Collection, Box 11. HRHRC.

magician's appendix was ruptured. He did not seek immediate treatment for this fatal malady. The myth of Houdini's own physical invincibility, heralded in dozens of dime novels and publicity posters, finally led to his death on October 31, 1926, Halloween.

During his life, Houdini made pacts with his wife and with several friends to attempt to communicate with one another from beyond if there indeed was an after-life. His wife Bess offered \$10,000 to any medium who could tune in to a message from Houdini that would be in the agreed-upon code—which he and his wife had used together in a mind-reading act. In January 1928 Bess Houdini wrote to Conan Doyle describing her efforts. One night at midnight when she called out to Houdini there was a loud report like a shot in the bathroom and she discovered the mirror had split open. She informed Conan Doyle, "It is the first time anything has occurred that has the slightest bearing on our compact. I called and pleaded again, and again, but that was all I heard."³²⁵ The message Houdini had promised to send, in code form, was "Rosabelle Believe." This was derived from the lyrics of a love song popular during their early courtship, the lyrics of which he had had inscribed in her wedding ring.

In January 1929, one year after the mirror cracking incident, minister Arthur Ford of the First Spiritualist Church in New York City gained the coded sequence for "Rosabelle" during a séance and reported that it came from Houdini.

³²⁴ Silverman, 407-09.

He delivered the full message several weeks later and Bess Houdini temporarily was convinced. Pre-empting our current obsession with Elvis's immortality, newspaper headlines on January 8, 1929, read: "Houdini Lives!" Two days later the New York Sun announced that the message was fraudulent. Prior to the séance, Ford had admitted to a female reporter that he had not received the coded words from the spirit world. Ford insisted that the reporter had been out to get him and that he had been maligned. Houdini's friends claimed that the codes had been revealed in biographies of Houdini before the séances. Bess Houdini also ultimately declared that she never received a satisfactory message and in so doing underlined her and her husband's doubts that there was "anything in this belief in Spiritism."

Though Houdini had been plagued with imitators during his career, after the magician's death, imitating Houdini gained a new dignity. The recreation of Houdini's tricks and the busting of phony mediums became a rite-of-passage for young stage magicians. Such imitators ensured that the nineteenth-century anti-Spiritualist stance of magicians would be maintained. Yet few of Houdini's imitators had a relationship with the occult world as ambiguous as that of Houdini. His zeal in exposing frauds was fueled by his own fascination with the otherworldly. Houdini didn't simply follow the tradition of policing the lines between "honest" and dishonest trickery. Conceivably, Houdini saw himself as a

³²⁵ Beatrice Houdini to Doyle, 28 June, 1928. HRHRC.

kind of medium and his anger towards Spiritualists was a form of displaced attraction.

Enchantments in the Age of Disenchantment

Historians often isolate the late nineteenth century in America as an age of realism, when notions of progress rooted in simple facts and rational laws prevailed.³²⁶ According to this description, the American Civil War and its horrors put to rest earlier religious-based hopes in the perfectibility of humanity and ushered in a desire for scientific progress based on documentation and objectivity. This description, however, ignores the fact that throughout most of the nineteenth century the technological vision of progress overlapped with a religious vision of the progress of the soul. Likewise, the push towards realism and mass production engendered and provided the means for promoting a counter trend: the public taste for illusions of all sorts.³²⁷ New technologies offered means to make commodities of such illusions and helped prompt the twentieth-century culture of the image.

Both Spiritualist performers who ordered their tricks from magic supply catalogues and anti-Spiritualists took advantage of this public thirst for illusions.

³²⁶ See, for example, David E. Shi, Facing Facts: Realism in American Thought and Culture 1850-1920 (New York: Oxford University Press, 1995.)

³²⁷ See, Miles Orvell, The Real Thing: Imitation and Authenticity in American Culture, 1880-1940 (Chapel Hill: University of North Carolina Press, 1989), 20-23; 36-39.

Spiritualists presented their wonders as the authentic work of spirits, while magicians offered them as playful recreations of inauthentic originals. Magicians could be thought of as both stripping away illusions, and as relying on technology to recreate miracles in the same way that Bowery theaters and resort hotels at the turn of the twentieth century presented recreations of spectacular events like the Johnstown Flood or the eruption of Mt. Vesuvius at Pompeii. The performer who asked "If Not Spirits, What Is It?" in Genoa, New York, might have appealed to an individual spectator who required neither a rational nor an irrational explanation of such stage spectacles.

The age of realism was also the age of deceptions, and, as such, ripe for the stage magician. Much like the Wizard of Oz in L. Frank Baum's classic tale, the magician was an expert in deception and manipulation. Baum, who edited a journal for department store window designers, depicted the wizard as a Barnumesque character, a wonderful humbug, able to manipulate and influence the innocent munchkins with the apparatus of deception, much like the growing advertising industry at the turn of the century.³²⁸ Within the context of rising commercialism, the magician presented a triumphant model—the master of deception from whom advertisers and corporations had much to learn. The stage magicians' ability to flourish while wonder showmen like hypnotists and Spiritualists sputtered likely had to do with the modernist core of their

³²⁸ William Leach, Land of Desire (New York: Pantheon, 1993), 246-60.

performances. Through anti-Spiritualism they could promote themselves as friends of science. And through the magicians' stance as "honest tricksters" who only simulated occult wonders with natural means, they offered the public a glimpse of the apparatus of deception enveloping them.³²⁹

By taking away the occult as an explanation and substituting trap doors and mirrors, Houdini and other stage magicians increased the audience's "thrill." Not only could these men duplicate the Spiritualists' spectacular effects, but they also offered another form of—possibly-misogynistic thrill—as offstage and on the male magician stalked, then stripped the garments of honesty from the Spiritualist medium, exposing her as a naked fraud. If they reinforced cultural stereotypes, they also exposed the manipulations inherent in commercial culture. The magicians were not precisely educating their audiences, but "wising" them up to the art of deception. Having recognized the disenchantment of the world, the stage magicians were offering a variant on the wonder show: one based in natural processes that exalted human ingenuity and potential.

³²⁹ I owe this insight to James W. Cook's paper, "Humbug Universal: P.T. Barnum and the Perils of Artful Deception," October 13, 2000, at the American Studies Association National Conference, Detroit. See also Cook, The Arts of Deception, 163-213.

Chapter Five: The Mind Reader

Psychologist Joseph B. Rhine began his rise in psychic research in 1927, when he and his wife Louisa E. Rhine tested "Lady Wonder—the Educated Mind Reading Horse" of Richmond, Virginia. Adults who paid \$1.00 and children who paid 50 cents were allowed into Lady Wonder's stable where she spelled out answers to questions and solved mathematical problems by flipping lettered or numbered cards with her mouth. The Rhines concluded that "Lady" had no thinking ability but did show signs of telepathy. They reported that even when hidden behind a screen, the horse was able to pick out numbers shown only to her trainer.³³⁰ Rhine's research was encouraged by William McDougall, then head of Harvard's psychology department. When McDougall left Harvard to chair the psychology department at Duke University in 1928, Rhine soon after joined him, and he remained as the head of Duke's parapsychology laboratory until 1965. At Duke, Rhine's extensive experiments with E.S.P. in the 1930s helped bring

³³⁰ J.B. Rhine and Louisa Rhine, "An Investigation of a 'Mind-Reading' Horse," Journal of Abnormal and Social Psychology, 23, no.4 (1929), 458.

renewed legitimacy to psychic research, which had been on the wane since its earlier champion William James's death in 1910.

Though his work was frequently attacked, Rhine managed to make psychic research respectable enough to debate. Instead of relying on anecdotal evidence about sightings of ghosts and apparitions, dream messages, or bewildering reports from dark séance rooms, Rhine set up E.S.P experiments with easily quantifiable results. Such research had a progressive component, as it stressed human achievements, de-emphasized psychic research's seemingly morbid interests in the utterances of the dead, and questioned the paradigm of "abnormal psychology" that most psychologists relied on to explain the uncanny. His experiments also had a subversive component, as they relied on scientific methods to question the mechanistic and materialistic worldview that then still pervaded the scientific project. Rhine also coined or promoted terms that stuck, including "extra-sensory perception" and his preferred term for psychic research, "parapsychology," borrowed from the German "parapsychologie."

A few psychologists, most of them trained under McDougall at Harvard, endorsed Rhine's work—many more, B.F. Skinner, among them, ridiculed it. Nevertheless, Rhine had helped normalize the field. In 1938, the full membership of the American Psychological Association was asked to fill out a questionnaire regarding E.S.P.'s validity. Of the more than half who responded, only 14%

insisted that E.S.P. was an impossibility, while 36% labeled it a "remote possibility" and another 12% called it "likely" or "established."³³¹

The general public, we can suspect, was even less skeptical. In the 1890s, when a scientist such as Oliver Lodge was proposing a model for the future invention of radio, writers Mark Twain and Frank Norris promoted telepathy in essays and novels. Advances in technology, curiously, seemed to strengthen public belief in the paranormal. A decade later, when the public was celebrating Marconi's success broadcasting telegraph signals, a husband and wife team of mind readers, The Zancigs, became enormously popular in England and America, prompting one headline, "Is It Telepathy Or What? Probably What."³³² E.S.P. also had long been an interest of science fiction fans—books that featured Martians, for example, beginning with those of H.G. Wells and Edgar Rice Burroughs, almost invariably gave the aliens telepathic powers, implying this ability belonged to a more advanced evolutionary level. Just as the advent of telegraphy in the 1840s had prompted the Spiritualist movement, advances in technology at the end of the nineteenth century prompted interest in miraculous human mental powers. The wonder shows of mind readers assured the public that human potential was continuing to unfold and keep pace with scientific and technological progress.

³³¹ Lucien Warner and C.C. Clark, "A Survey of Psychological Opinion on ESP," The Journal of Parapsychology, vol., 2, no. 4, (1938), 296-301.

³³² Julius Zancig, Two Minds with but a Single Thought (London: Paul Naumann, 1907), 38.

Though scientists are frequently cast as explorers of new frontiers fighting reactionary forces,³³³ they often have taken their cue from the popular imagination. Clinical research into hypnosis in the nineteenth century, for example, lagged considerably behind the public demonstrations of magnetizers. The Rhines' look at the horse "Lady Wonder" also suggests that scientific "explorers" and entertainers were both contributing to the new trend; likewise the spheres of scientific research and entertainment could interpenetrate. This chapter will examine the mind reading show and connect it to the historical debate over the authenticity of E.S.P.; it will also track the shift of interest of romantic scientists and the public from psychic research to parapsychology, from Spiritualism to E.S.P., both in the academy and the public realm of entertainment.

"The Curtain of the Mind Uplifted"

Not only did entertainers contribute to public fascination with the paranormal but often they—however genuine or phony their presentations—were the lone explorers of a “frontier” that skeptical scientists thought of as swampy, at best. American neurologist George M. Beard put the case in a slightly derogatory light when he remarked, "In the history of science, and notably in the history of

³³³ See, for instance, Roland Marchand and Michael Smith, "Corporate Science on Display" in Ronald G. Walters (ed.) *Scientific Authority in Twentieth Century America* (Baltimore: Johns Hopkins University Press, 1997), 149. This essay discusses how public relations experts began to

physiology and medicine, it has often happened that the ignorant and obscure have stumbled upon facts and phenomena which, though wrongly interpreted by themselves, yet, when investigated and explained, have proven to be of the highest interest."³³⁴ This chapter will argue that variety performers of mind reading influenced the scientific investigation of the paranormal. Who were the "ignorant and obscure" performers that managed to intrigue the public and the scientific community? What were their acts like? How did the marvels they presented influence popular interests?

Nineteenth-century mesmerists initiated the dramatic presentations of mind-reading that led to a faddish interest in telepathy by the century's close. These early magnetizers, who existed in a twilight zone between showmanship and science, claimed to be in telepathic communication with their subjects, and that their somnambulists showed heightened sensory awareness and intelligence, and possible clairvoyance (the ability to see scenes or objects at a distance). When mesmerism reached America in the 1830s, it became enormously popular. Soon stage magicians mimicked the mesmerists' acts, and the mesmeric and magic streams merged in the "mind reading" specialists who emerged in the late nineteenth century.

urge world's fair exhibitors to stop explaining scientific processes and instead stress how scientists were venturing into new frontiers.

³³⁴ George M. Beard, "Physiology of Mind Reading," Popular Science Monthly, February, 1877, 459.

The mesmerist emerged as a popular culture figure in the antebellum. To take one example, Nathaniel Hawthorne's novel The Blithedale Romance (1852) gave an unflattering portrait of the itinerant mesmerist Professor Westervelt, who claimed to be in telepathic communication with his subject, the "Veiled Lady." Hawthorne depicted Westervelt as a handsome though corrupt man with a gold band on his false teeth who brandished a serpent-topped walking stick; Hawthorne's mesmerist was a roguish buffoon. On stage the public saw "a bearded personage in Oriental robes, looking like one of the enchanters of the Arabian Nights." After blowing his nose, Westervelt introduced his "Veiled Lady," who could answer questions and identify objects out of view. Spiritualistic "Veiled Ladies" would later do away with mesmerists, and give trance talks to audiences thrilled to hear a woman speak in public. But demonstrations of thought transference lived on.

Public fascination with mesmeric clairvoyance in the mid-nineteenth century led French magician Robert-Houdin and Scottish magician Professor John Henry Anderson to add "Second Sight" acts to their performances. Houdin would wander among audiences, examining items that spectators showed him, then ask his blindfolded son to identify them. The performers used an elaborate code, with simple variants on seemingly-banal statements cueing the subject. By the late nineteenth century, some performers began to specialize in mind reading acts, often to the bafflement of scientific experts.

Dr. S.S. Baldwin, a.k.a. "The White Mahatma," a comedic psychic performer who ran something of a medicine show in the late nineteenth century, was an innovator in the mind-reading game. A clipping from 1882 in England notes, "Mr. Baldwin is an American endowed with a perpetual flow of the native humor of his country, which serves to divert his audience as much as his skill astonishes them."³³⁵ Baldwin loved to coin and use impossible words like "somnambumancist," "somatic indigitation" and "asomatous sejunction." One of his programs stated, "Professor Baldwin is an escomateur and 'deceptionist' who desires to produce an exciting, interesting, and bewildering entertainment, and *all* his talk must be understood as being to that effect, and must be taken 'cum grano salis.'³³⁶ Baldwin revealed the tricks of Spiritualists as one part of his act. Yet his wife, Miss Kittie Baldwin, also performed as a clairvoyant, subject to "Somnambumistic Visions."

Baldwin, an admitted trickster, developed the "pad system" later passed off as genuine by many other mind-readers, such as Anna Eva Fay. This act required that audience members scribble out questions on pads of paper. The spectators would keep the questions, sealed in envelopes, but assistants would collect all the pads. The bottom of the pad was treated with wax, so the question could be read and fed to the mind reader. Anna Eva Fay's daughter, Anna Fay,

³³⁵ Clipping. 9 September, 1882. Baldwin file at HRHRC.

³³⁶ Baldwin's Illustrated Butterfly, 1889, 3. HRHRC.

added the innovation of hiding a telephone receiver in her costume to get more details.

One of Anna Eva Fay's assistants, Washington Irving Bishop, went solo in the 1880s.³³⁷ His "muscle reading" act stirred public fascination in America and in England where he evoked the ire of spiritualist-hunter John Nevil Maskelyne. Bishop, who at times used the term "Bishopism" to describe his ability to read thoughts, also patiently submitted to the tests of scientific panels in England. If Baldwin styled himself a "native" wit whose speech was "redolent of the humor characteristic of Mark Twain and Artemus Ward," Bishop preferred a presentation based on high sentiments and even sentimentality. One program includes the lyrics to one of Bishop's ballads, each of the four stanzas starting with: "Good night! my baby; sleep, for love is here/To guard thy slumber, tiny soul."³³⁸ Bishop was a polished performer who denounced "second sight acts" and even wrote a pamphlet "Second Sight Explained," which revealed the codes a magician might rely on.³³⁹ This is a testament to Bishop's popularity and rank, as rarely would a "mystic vaudevillian" dare to take on the magicians, who preferred to do the "unmasking."

Bishop's specialty was "muscle reading." Blindfolded, he could find hidden objects, or spell out words that subjects touching him were thinking. The

³³⁷ Other show business pamphlets suggest a different lineage for Bishop, claiming he was an assistant to J. Randall Brown, or "the Celebrated Brown," a newsman turned muscle reader in 1873.

³³⁸ Program. 27 February, 1887. Wallack's Theatre, New York City. HRHRC.

vogue for muscle-reading began in the 1870s with the performer J. Randall Brown, many of whose assistants, like Bishop and Stuart Cumberland, went solo. The phrase "muscle reading" had been coined in 1877 by American neurologist George M. Beard, who also diagnosed acute "neurasthenia" among Americans near the turn of the century. William James, in his short essay "Telepathy" from 1895, remarks that in such exhibits the performer is guided by "the encouragement or checking which the agent's hands more or less unconsciously exert upon his at first tentative movements."³⁴⁰

Bishop demonstrated "muscle reading" at its finest. In the early 1880s, Bishop, blindfolded, with two subjects touching his wrists, drove a carriage at a rapid clip through the streets of Manhattan to find a hidden gem. A combination of muscle reading and the ability to put on a blindfold that one could see through or below helped others perform such publicity stunts, which became a traditional opening act for muscle readers. In England, Bishop gave performances before enthusiastic audiences, including the Queen.

Unlike Baldwin, who insisted that his performances be taken "cum grano salis," Bishop insisted he was the genuine article, a mind reader. He was eager to let scientists examine him in England, and a writer for Nature indicated that Bishop's performances often resembled "in miniature a soirée of the Royal

³³⁹ "Second Sight Explained" is a manuscript in the Bishop file at HRHRC.

³⁴⁰ William James, The Works of William James: Essays in Psychological Research (Cambridge, Massachusetts: Harvard University Press, 1986), 120.

Society."³⁴¹ Bishop told a Royal Society panel that included Francis Galton, George J. Romanes and Ray Lankester that he was not averse to the hypothesis of "muscle reading" though he had no idea himself how he managed his feats. As such, he was like an artist who responded to queries of "how do you do it?" with the answer, "I prefer it remain a mystery."

Beard, for one, was annoyed at all the scientific attention Bishop was receiving in England. As early as 1874, Beard had deduced that "unconscious muscular action" could explain the mind reading act put on by "the celebrated Brown" who toured America in the 1870s and for weeks "held the American people by the nape of the neck, controlling the press as absolutely as a Napoleon or a Czar."³⁴² Beard had examined mind reader J. Randall Brown before a New Haven Music Hall audience of 1,000 in 1874, and over the protests of Yale faculty and the audience, insisted Brown's abilities were not examples of "thought transference," but genuine examples, instead, of what he called unconscious muscle-reading. When Bishop, according to Beard an inferior performer to Brown, began to grow in popularity, Beard was perturbed that muscle-reading

³⁴¹ As quoted in George M. Beard, The Study of Trance, Muscle Reading and Allied Nervous Phenomena (New York: George M. Beard) 1882, 33.

³⁴² George Beard, The Study of Trance, Muscle-Reading and Allied Nervous Phenomena (New York, 1882), 17. Electrical experimenter Michael Faraday had earlier relied on the thesis of unconscious muscular action to explain the table-tipping and table-turning phenomena during Victorian seances.

was suddenly "exciting so much inquiry in the neurological world," while his articles about Brown had gone ignored.³⁴³

Brown, Bishop, and others, according to Beard worked strictly by sensing which direction to move in and when to grab or point to an object, this all based on noting tension or relaxation in the muscles of his or her guide. Yet their acts could elicit thrills from audiences. As Beard mentioned, often the blind-folded mind readers, after carefully making contact with a subject, would then tear across the room or through the aisles of a crowded hall at top speed and stop at precisely the right spot to find a watch in someone's hand. In other cases they might lift a hat off one audience member, move across the room and leave it on someone else's head, as was "willed" to them. Other performers learned to use "sound" as their guide and could do similar feats without any physical contact between them and their "guide."

Much of the credit for the renewed interest in mind reading in the late nineteenth century had to go to the performers and not to articles written in scientific journals. Back in New York, Bishop continued to stir up controversy and to use an elegant tone in his staging and promotion. An eight-page program for Bishop, full of noble sentiments and diction, for a New York performance of 1887 suggests how an audience member's excitement may have built while seated in the comfortable theater surrounded by the murmur of other spectators' voices

³⁴³ Ibid., prefatory note.

and the swishing of program pages, as they waited for the controversial Bishop to appear on stage in his tails and medal-daubed coat.

The program begins: THE ENIGMA OF THE CENTURY. Other bold-face headings state "The Curtain of the Mind Uplifted!" and "Mr. Washington Irving Bishop, the Original and World Eminent Demonstrator of the Phenomenal Power of Mind Reading has consented to give a public demonstration..." The program lists a page and a half of important personages whom Bishop had performed before, including the Czar of Russia and his family, the Queen of England, dozens of other members of European royalty, along with such American luminaries as the preacher Henry Ward Beecher, Oliver Wendell Holmes, and, to appeal to New York's uptown German Jewish population, Rabbi Gustav Gottheil.

In formal diction, the program describes many of Bishop's "muscle reading" feats. Blindfolded, touching only the fingertips of another, he is able to wander through the palaces of royalty and find hidden objects or manuscripts. The illustration on the back shows the handsome, blindfolded Bishop, in formal attire, with a hand over his shoulder so his fingertips just meet those of the elegant Princess Alexandra of England, "Her Royal Highness the Princess of Wales," while he spells out with his other hand the "endearing name" of her sister. Such an illustration rhetorically suggested that Bishop's talent, personality, and courtliness placed him on a social plane equivalent to that of the aristocracy.

Bishop's stagings encouraged a gothic more than a scientific appreciation of his abilities. Some accounts describe Bishop as being keyed up during performances and drained by the level of concentration performing required. He told the English scientists he was in a state of "dreamy abstraction" while performing. Professor Leonidas, the turn-of-the-century hypnotist and pamphleteer, occasionally put on performances of "contact mind reading" like those of Bishop and insisted that he would receive a "visual hallucination" when he neared a place in a hall where an object had been secreted. Leonidas also said of the driving stunt or "street test" that "it is rather weakening, but this is a weakening business. I am not giving my hearty endorsement to this class of work. It is not productive of long life and happiness."³⁴⁴

Leonidas might have had Bishop's life story in mind when he penned these lines. Bishop's life was short and his end macabre. After a controversial tour during which critics charged Bishop with fraud, he collapsed on stage towards the conclusion of an impressive but exhausting performance at the Lamb's Club in New York on May 12, 1889. Attempts were made to revive him by "electric shock" and brandy, but he was soon pronounced dead. Those intimate with him, however, knew that he, like a hero of one of Poe's tales, often fell into cataleptic spells.³⁴⁵ His distraught mother, also subject to such spells, accused the doctors

³⁴⁴ Professor Leonidas, Stage Hypnotism (Chicago: Bureau of Stage Hypnotism, 1901), 124.

³⁴⁵ Fear of premature burial was widespread in the nineteenth century and not just an aberration of the minds of Bishop's mother and Edgar Allan Poe. One electrical journal published illustrated

who performed the autopsy on the mind-reader of murdering him, likely because they wished to study Bishop's phenomenal brain. Adding a particularly macabre touch, Bishop's mother declared, "I have a witness who heard my boy cry out 'Mother, help,' as the surgeon's saw entered his brain [during the autopsy]...In my son's clothing was at the time a paper directing that no autopsy should be held, as he feared that just such a mistake should be made..."³⁴⁶ The following year, Bishop's mother began distributing photographs captioned "The Murdered Mind Reader" showing him at rest in his coffin.³⁴⁷

Just as hypnosis led to public concerns about mental derangement, Bishop's death touched off a small panic about the connection between mind reading and catalepsy.³⁴⁸ If anything, these new worries increased public interest in telepathy. Dozens of similar acts were launched. Hypnotists also turned to muscle reading as a secondary act. Hypnotist P.H. McEwen mixed mind reading with his demonstrations, and the hypnotist Professor Leonidas also occasionally put on contact mind-reading performances in small towns. He cautioned hypnotists, when appearing as mind-readers, to drop the 'Prof.' before their name, noting, "it is better to appear on your bills as 'Mr.' rather than 'Prof.' It is more dignified. The 'Prof.' is as essential to the hypnotist as the 'Hon.' is to the Senator.

plans for installing telegraph keys inside coffins so that those wrongfully buried could be rescued. See "Telegraphy from the Grave," Electrical Review, vol. 18, no. 21, July 18, 1891, 279.

³⁴⁶ New York Times, 4 June, 1889.

³⁴⁷ Bishop file, HRHRC.

³⁴⁸ Sid Macaire, Mind Reading or Muscle Reading (London: Simpkin, Marshall and Company, 1905), 76.

It is part of his life and if he drops it he ceases to 'draw' as the managers say."³⁴⁹ Leonidas's book codified the muscle reading act, and explained how the "street test," whether performed on foot or carriage, was crucial to drumming up an audience. He also offered the up and coming mentalist this copy for eventual posters: "There journeys a stranger from the far east, a man of mystery, a student of Oriental Sorcery, an adept in the fields of Mental Power, a reader of unuttered thought. A Seer. From the east he comes, and unto the east he shall return."³⁵⁰

Contact mind-reading led to yet another fad for "no contact" mind readers who performed the same stunts without actually touching their guides. George Newmann, a.k.a. "The Great Newmann," a hypnotist, magician and mind reader, launched his own travelling show, the Mystic Vaudeville Company, which included stage illusions, anti-Spiritualism, hypnotism, mind reading, and motion pictures. He stressed that he was the "original no contact mind reader." He performed the blindfold driving test early in his career with a carriage and horses, and later with an automobile, but only "under favorable weather conditions," and he warned citizens to "Stay on the Sidewalks and guard the kiddies."³⁵¹ Dropping the gothic trappings of Bishop, Newmann, as a twentieth-century man, preferred to emphasize the psychological entertainment he provided.

³⁴⁹ Leonidas, 96.

³⁵⁰ Ibid.

³⁵¹ Handbills number 7, number 8, Box 15. George Newmann Collection. Rare Book and Special Collections, Library of Congress.

Whether or not the proliferation of mind readers is entirely to be credited, telepathy was “in the air” in the 1890s. Performers piqued interest, while the technically-minded relied on new technology as a metaphor for the likelihood of the phenomenon. Several years after Bishop's death, Mark Twain wrote an essay indicative of this change in public attitude. "I have never seen any mesmeric or clairvoyant performances or spiritual manifestations which were in the least degree convincing," Twain wrote, "...but I am forced to believe that one human mind (still inhabiting the flesh) can communicate with another."³⁵² In the essay he thanked the Society for Psychological Research in England for having "convinced the world that mental telepathy is not a jest, but a fact, and that it is not a thing rare, but exceedingly common."³⁵³ Twain remarked that he'd hoped to include some notes on telepathy in A Tramp Abroad (1878), but his editors had persuaded him not too, and he admitted that he had also feared the public's attitude. However by 1891, notions concerning such matters had changed mightily.

Twain's essay included several anecdotes conceivably psychic in origin. He gave an example of waiting three months for an electric bell to be fixed on his home. Twain finally wrote a complaint to the company one evening and the next morning, before his letter had been sent, a worker came to repair the problem. Offering another example of "crossed letter," he described suddenly having a brilliant idea for a book about the silver mining boom in Virginia City. He

³⁵² Mark Twain, "Mental Telegraphy." Harper's Magazine, December, 1891, 99.

planned to urge an old journalist friend of his to write it, then soon got a letter from that same friend outlining the same book idea and asking his opinion. Eventually Twain deduced that if he wanted to hear from some distant friend, all he needed to do was sit down and write a letter. Instead of mailing it, he would wait a day or two and get a fresh letter to respond to. Twain, an aficionado of inventors and frequent visitor at Tesla's workshop, concluded his essay with a suggestion for a mind-reading device that may well have been serious: "This age does seem to have exhausted invention nearly, still it has one important contract on its hands yet—the invention of the phrenophone; that is to say a method whereby the communicating of mind to mind may be brought under command and reduced to certainty and system..."³⁵⁴ Twain argued that mind reading was likely activated by a "finer and subtler form of electricity," which inventors needed to capture and work with. He concluded his essay with the note that "While I am writing this, doubtless somebody on the other side of the globe is writing it too."

Twain, to some extent, was following the lead of the technical press. Turn of the century interest in telepathy was not limited to the occult fringe. Articles in technical journals outlining the new possibilities of the technologically-enhanced imagination appeared as early as 1891. In that year, the trade magazine Electrical Review ran a column from an anonymous contributor known as "The Prophet"

³⁵³ Mark Twain, "Mental Telegraphy," 94.

who eloquently addressed the theme. The writer outlined how the human ear could only hear a narrow range of pitches, and suggested that a recording device might be developed to capture sounds beyond this range. As the Prophet put it, "For aught we know, the air may be at all times filled with most beautiful music... Shall we ever be able to listen to the... mysterious music of nature who has for centuries wasted its sweetness upon the dull ear of mankind? Science answers with the phonograph, and says that by its aid we may annex, perhaps, another world."³⁵⁵

In 1892, the Electrical Review published two articles by leading engineers that speculated on the possible mechanism behind telepathy. In the first, the telephone engineer J.J. Carty, later to become the chief engineer for research and development at AT&T, developed a model for telepathy using as his basis the workings of telephone exchanges. He noted that in phone exchanges sometimes messages could get crossed when the current in one wire induced a corresponding current in another wire it was not touching.³⁵⁶ This could happen even when both wires were "perfectly insulated." The author speculated that nerves in the brain were also sheathed to prevent induction, but mishaps likely could occur. "If it is conceivable," he went on to inquire, "that one nerve might act upon another without contact, why not one mind upon another...?" Carty apparently anticipated

³⁵⁴ Ibid., 101.

³⁵⁵ "The Prophet," Electrical Review, September 26, 1891, 66.

³⁵⁶ J.J. Carty, "Is Electricity Related to Nerve Force?" Electrical Review, 20 February, 1892, 358.

a similar theory, set forth by the physicist and psychic researcher William Crookes in 1896. Just as telegraphy had stimulated interest in Spiritualism, telephone and hopes for radio were stimulating interest in telepathy.

The second article was based on a talk at the Franklin Institute in Philadelphia, given by Edwin Houston, a co-founder of one of the early electrical companies that eventually became General Electric. Although Houston noted that he was indulging in speculations, he argued that when a subject is deep in thought, cerebral energy "is dissipated by imparting wave motions to the surrounding ether."³⁵⁷ These waves could be imparted to another brain by way of "sympathetic vibrations," as when one tuning fork causes another to vibrate, or as in the "electric resonance" of Hertzian waves. Houston was arguing from the model of radio, not yet invented but frequently discussed. He went on to propose the possibility of a thought recording machine. A lens would somehow impress thought waves on a "suitably sensitized plate," like one of Edison's wax cylinders, and a means could conceivably be found to "project" waves through the sensitized record so that others could receive the stream of thought.

Edwin J. Houston, "Cerebral Radiation," Electrical Review, 4 June, 1892, 190.

Love, Marriage, and Telepathy

In December of 1901, Marconi succeeded in broadcasting the brief telegram 'S' across the Atlantic Ocean. Radio was still in its infancy five years later when The Zancigs, the greatest of the turn of the century mind readers, played upon the public's sudden fascination with mental telegraphy and preference for it over the spiritual telegraph. Leaving behind muscle reading, the Zancigs revived what magicians had once called a second sight act, in which one performer would covertly send coded messages to the other, either through the use of banal phrases or non-verbal signals, in order to convince an audience that telepathy was taking place. The Zancigs' act played upon notions of domesticity and love to explain their apparent abilities at thought transference. Successful appearances before the King and Queen of England made their London run in 1906 and 1907 hugely popular.

The Zancigs, Julius and Agnes, were Danish immigrants to America at the turn of the twentieth century, who met and married in Portchester, New York. She was working as a governess, and he at a variety of menial jobs when they began to develop the elaborate visual and spoken codes on which they based their second sight act. During performances they both wore glasses, he rather spiffy in a white suit reminiscent of the tropics, she wearing simple flowered hats and high-necked, lacy Victorian dresses that draped on the floor. Their co-written stage

³⁵⁷ Edwin J. Houston, "Cerebral Radiation," Electrical Review, 4 June, 1892, 190.

biography, Two Minds With But a Single Thought (1907), includes many photographs of the duo suggestive of the art of telepathy. In one such portrait, they face opposite sides of the frame in profile, he in his white suit with hand to the side of his brow, concentrating furiously, "telegraphing," while she looks out with a simple, open expression, hand cocked gently to ear, "receiving." Other photographs show them being recorded via phonograph, to capture the brilliance of their predictions, to suggest their modernity, and to allow experts to study their speech for decoding.

They reached the height of fame in 1906, when they began a long, immensely controversial run at the Alhambra music hall in London. As in one of Barnum's museum displays the issue of "authenticity" keyed public fascination. In London, the Zancigs were the object of ceaseless attention and speculation. The duo received daily coverage. Not everyone was swept away. According to one dour report titled "The Zancig Fever," "M. and Madame Zancig...only a few months ago...were giving an open air performance in the Isle of Wight, thankful for a few stray coppers that came grudgingly from a seaside audience, and in the twinkling of an eye they are exciting the interest of the most enterprising newspapers of the day, setting the most distinguished scientists by the ear, filling the coffers of a music-hall, and receiving the hall-mark of a 'command'

performance before Royalty. It is the most triumphant thing accomplished by humbug in recent years..."³⁵⁸

Their popularity in London began in 1906 after the Zancigs gave a demonstration at the Daily Mail which led to an article titled "The Cleverest Music-Hall 'Turn' on Record. Thought Transference Through Closed Doors. Tests at the 'Daily Mail.' What is the Mystery." According to reporters, when Julius and Agnes were facing opposite corners of the room, he was able to telepathically project thoughts to her. She would identify objects and read passages from books he held. The report also stated that when placed in another room, Agnes succeeded in divining a line from a book that he had chosen. The reporters also made much of the Zancigs' insistence that their ability was the product of love. "Long before they really ascertained by demonstration the possibility of this mysterious occult power, they knew that between them was that beautiful sense of harmony of which Plato discourses—a perfect affinity of soul; indeed, 'two hearts with but a single thought, two hearts that beat as one.'"³⁵⁹

Julius Zancig knew how to both flatter and slyly poke fun at his English spectators' credulity. In this article he remarked, "What a difference there is between American and English audiences. The Americans seem to care only for the amusement and wonder of it; the English take a deep and intelligent interest in

³⁵⁸ "The Zancig Fever," The Throne, 19 January, 1907, 404. Magician's Biography file, Julius Zancig. HRHRC.

³⁵⁹ "The Cleverest Music Hall 'Turn' On Record," Daily Mail, 1 December, 1907, 6. Magician's Biography file, Julius Zancig. HRHRC.

it as a scientific phenomenon; they want to study it and think about it. English audiences seem to be more philosophical and appreciative of the scientific side of the exhibitions."³⁶⁰ The Daily Mail ran daily coverage of the Zancigs. And on December 29, 1906, the newspaper began a five part series written by Zancig titled "The Story of My Life." The London papers also ran articles that offered various theories of how the Zancigs managed their feats, and articles that asked why the Zancigs' manager was forbidding them to run test demonstrations before a panel of scientists.

In London, the Zancigs were the object of ceaseless attention and speculation. An article titled "Increased Mystification Last Night" described the audience's excitement, chatter, and attempts to control Zancig, for example, by demanding that he hold his hands behind his back—to prevent the use of a visual code. "Men rose out of the stalls and got near to Mr. Zancig as he examined articles, and noted his every movement with intense concentration. That one and all 'gave it up' was conclusive proof that nothing whatever of the mystery had leaked out."

The paper also ran hypothetical explanations of how the pair succeeded. One of the most bizarre was the "ventriloquism" theory that William Kennedy, an admiral—who one hopes was a better navigator than thinker—promoted in his letter to the Daily Mail. Kennedy explained, "Mr. Zancig throws his voice to his

³⁶⁰ Ibid.

wife, whose lips move and apparently utter the words, which are his." He also explained how she was able to write answers silently on a slate. In these cases, he "throws a whisper to her."³⁶¹

Another zany explanation, that placed the Zancigs' act firmly in the currents of the "electromagnetic imagination" then gripping the masses, came from an article that Zancig quoted in his book. This reporter insisted that the couple, rather like dogs, could emit and "hear vibrations" outside the ordinary range of human hearing.³⁶² A minister from Fulham became a true believer and scoffed at doubters who proposed as solutions, "Ventriloquism, codes, Morse signals by means of the eyelids and other equally absurd theories." This correspondent wondered why audiences ruled out "the only obvious solution to the problem—namely, thought communication in a highly-developed condition." He feared the reason was the same that kept people away from churches, that they had no appreciation for spiritual matters.³⁶³ Like this minister, Sir Arthur Conan Doyle, never one to play it safe, also became a champion of the Zancigs as authentic mind readers, despite the fact that his friend Houdini, who had performed with the Zancigs, and performed his own second sight act, assured him it was pure hokum.

³⁶¹ Daily Mail, 2 January 1907. Magician's Biography file, Julius Zancig. HRHRC.

³⁶² Julius Zancig, Two Minds with but a Single Thought (London: Paul Naumann, 1907), 39. Zancig quotes an unnamed reporter.

³⁶³ Daily Mail, 2 January 1907. Magician's Biography file, Julius Zancig. HRHRC.

More discerning observers explained that the couple used oral and visual codes. Julius Zancig's white suit made it easier for his wife to see his hand positions. Her thick Danish accent allowed her to fudge the last syllables of names, making coded transmission even easier. Reporters and audiences often recalled as "silence" Julius Zancig's seemingly harmless reiterations of phrases like "tell me what I see" or "now concentrate on what I see" which did in fact impart codes. Glasses helped Agnes Zancig appear to be facing forward when glancing to the side for cues. Julius Zancig's glasses were an excuse for him to "affect shortsightedness, and to move from left to right and up and down in focusing on the coin..."³⁶⁴

The Throne continued its attack on the Zancigs and challenged them to prove their authenticity before a select panel, making note of Agnes Zancig's "frequent" hesitations and the many "contortions of her partner in the curry-cook's costume."³⁶⁵ The Zancigs' manager intervened and insisted there would be no demonstrations.

Zancig played it both ways. At times he denied having occult powers, at times he affected a simple innocence and refusal to give the power a specific name, or again attributed it to that more familiar and unassailable thing called love. "Really though, we don't understand what the power is...we can only

³⁶⁴ "The Zancig Mystery," Daily Mail, 27 December, 1906, 5. Magician's Biography file, Julius Zancig. HRHRC.

³⁶⁵ "The Zancig Fiasco," The Throne. 23 February, 1907, 615. Magician's Biography file, Julius Zancig. HRHRC.

account for our power by explaining it on the ground of most happy union, perfect harmony and the development of a latent gift, which we firmly believe is shared by everyone."³⁶⁶ In his book he said that when people attributed the couple's ability to telepathy or to codes, he would respond humbly, "Yes, your guess may be right, but we leave it to you."³⁶⁷ During another interview, Zancig shaded his answer to imply genuine psychic power, "All the guesses as to how it is done are wrong; all save those that attribute it to something unmaterial."³⁶⁸

The manager of the Alhambra, Alfred Moul, also came to their rescue, and forbade the Zancigs to give demonstrations before skeptical panels. Moul remarked to the press, "I have been loth (sic.) to entertain the suggestion that they should submit to the investigating dissecting knife...some of the conditions which it has been sought to impose are absolutely unreasonable." Moul also said he did not want an ugly dispute to arise, and so turned down The Throne's 500-pound bet that they could prove the Zancigs to be frauds. Moul added, "probably more people [in the audience] think it is a trick...Of course, there are others who think it is a genuine case of thought-transference."³⁶⁹ Moul also commented that it was not his business to unlock their "secret box—if they have one." And, referring to the muscle reading acts of Washington Irving Bishop and others, he added, "It

³⁶⁶ "Cleverest Music-Hall Turn," Daily Mail, 1 December, 1906, 6. Magician's Biography file, Julius Zancig. HRHRC.

³⁶⁷ Julius Zancig, Two Minds, 35.

³⁶⁸ "The Zancig Mystery," Daily Mail, 27 December, 1906, 5. Magician's Biography file, Julius Zancig. HRHRC.

³⁶⁹ *Ibid.*

suffices for me and, apparently, the London public that they are in possession of entertainment faculties on lines which place them as far beyond ancient methods of thought reading and 'together hand in hand we will roam to find the blessed pin' old business as the first specimen of the omnibus stand in comparison to a thousand guinea motor car."³⁷⁰

Zancig, usually unflappable, also took potshots at his critics. He remarked in one article, "We are perfectly aware that there are hundreds of people who can do the work that we do. We never denied it. Yet they do not seem to have struck the public as very wonderful—are we to blame for that?"³⁷¹ Their successful run at the Alhambra, the press frenzy, and two congenial demonstrations they gave before King Edward and Queen Alexandra led a publisher to ask Zancig to prepare a book. Zancig recalled the Queen asking if his book would "tell us the secret of how it is done?" He told her that "of course, I could not give away the secret."³⁷² And he answered the same question coming from a reporter, with, "That would be letting the cat out of the bag."³⁷³

The book that the English public eagerly awaited, Two Minds with but a Single Thought, came out in 1907. Zancig called it an "honest and open attempt" to teach its readers to be "mental operators." Anticipating psychologist J.B.

³⁷⁰ Daily Mail, 3 January, 1907. Magician's Biography file, Julius Zancig. HRHRC.

³⁷¹ "The Queen and the Zancigs," Daily Mail, 28 December, 1906,5. Magician's Biography file, Julius Zancig. HRHRC.

³⁷² Ibid.

³⁷³ "The Zancig Mystery," Daily Mail, 27 December, 1906, 5. Magician's Biography file, Julius Zancig. HRHRC.

Rhine's conclusions by about thirty years, he insisted that "everyone in the world, under certain conditions, can impress upon the mind of some other person his own mental images." Telepathy was a "strange, subtle inherent faculty, latent in every normal individual."³⁷⁴ The book insists on love as the foundation of the Zancigs' ability. The author reiterated the advice Zancig once offered in an interview, and which undoubtedly could be of use to anyone, even the most deluded of souls: "I should say to those who would develop the power: Find your other half, the alter ego, the one person who is needed to bring complete harmony into your life. Then, the rest is practice."³⁷⁵

Borrowing heavily from Zancig's "The Story of My Life" articles in the Daily Mail, the book describes how, after marriage, Zancig and his wife discovered, developed, and reaped the benefits of their mental link. Long before their days of glory, their ability surfaced in homely ways. He describes how he and his wife were continually surprising each other by purchasing tickets to shows the other one had also just purchased. One day when Zancig was in the midst of such a purchase, the box office clerk finally jumped in and said, "The joke's against you, Zancig...your wife bought the tickets ten minutes ago."³⁷⁶ Likening telepathy to physical culture, Zancig claims he began to practice "strengthening" exercises. In public places like theaters, he would stare at the back of strangers'

³⁷⁴ Julius Zancig, Two Minds with but a Single Thought. (London: Paul Naumann, 1907), 10-13.

³⁷⁵ "The Cleverest Music Hall Turn," Daily Mail. 1 December, 1906, 6. Magician's Biography file, Julius Zancig. HRHRC.

heads and get them to turn. Zancig found that "highly strung, nervous, brainy people [were] more responsive," women especially. Zancig also describes some of the taxing aspects of the business. His readers learn that it is difficult to transmit numbers and letters because of the danger that they can be scrambled or reversed in transmission, making, say, a "W" out of an "M." Practice is in order. He also encourages any endeavors that require concentration or memory. Hence, chess, music, and games of chance are all of value to the would-be mental operator. Ultimately, as in most magicians' biographies, the entertainers make a trip to India, where they are feted, and swap secrets with Brahmins and sages. He leaves us with visions of their pleasant days in India, and their opportunities to entertain sultans, kings and queens.

Domestic bliss did seem crucial to their acts' success. After Agnes Zancig's death, Julius tried to break in a series of partners but could not duplicate his former success. Eventually he became a psychic who gave consultations in Asbury Park, New Jersey. He was arrested in 1923 and found guilty of assaulting an elderly man also in the "theatrical profession." Zancig persevered, and in 1926 wrote a pamphlet called Crystal Gazing. There was no hedging on his psychic abilities now.³⁷⁷ He pitched the book to an audience fascinated by the occult and

³⁷⁶Ibid, 29.

³⁷⁷ W.G. Magnuson who ran a magic catalogue company in the 1920s that catered specifically to dishonest psychics indicated that Zancig was one of his customers. W.G. Magnuson to George Newmann. 22 March, 1928. In George Newmann, Spook Racketeer (Minneapolis: The author: 1943). Newmann Collection, Box 31, no. 41. Rare Book and Special Collections, Library of Congress.

astrology. He began the preface by claiming, "The World is at the Threshold of a New Spiritual Era and this is agreed upon by the most religious and [by] scientific clubs and societies." In its pages he also attempted a scientific explanation of the sixth sense. "The photographic plate," he wrote, "can register impressions which are beyond the perception of our highest sense of sight. The X-rays have put us into relation with a new order of impression-records quite beyond the range of our normal vision...Natures does not cease to exist where we cease to perceive her."³⁷⁸ After explaining the principles and uses of the fortune-teller's crystal, he put in a pitch for the superior line of crystals that he had available.³⁷⁹

An Otherworldly Meteorological Bureau

In the late 1920s and early 1930s, at the same time that Julius Zancig, in his decline, was offering crystal ball consultations in New Jersey, scientist Joseph Rhine was renewing interest in telepathy, clairvoyance, and even Spiritualism with his experiments in the psychology department at Duke University. Rather than attend seances in darkened rooms like the psychic researchers before him, Rhine set up experiments in card guessing that could be analyzed statistically. In appearance and deportment, Rhine, the handsome, sober-minded founder of the American field of parapsychology, was the exact opposite of raffish showmen like

³⁷⁸ Julius Zancig, Crystal Gazing: The Unseen World (Baltimore: J & M Ottenheimer, 1926), 9.

S.S. Baldwin and Julius Zancig. The Zancigs never failed to transmit a thought—Rhine's best laboratory subjects were able to guess cards at only slightly above chance. Rhine's colleagues agreed that he was a level-headed man of integrity. But, inevitably, Rhine's work evoked professional hostility. And as he became professionally ostracized, he directed his appeals instead to the public, further undermining his professional standing.

Why was the hostility he eventually provoked inevitable? Philosophers of science have pointed out that a new theory will be problematic if it questions a tenet of other scientists worldview.³⁸⁰ Rhine's romantic premises, which he shared with other psychic researchers, ultimately had more in common with the occultists they often deplored than with the majority of their scientific colleagues whom they wished to win acceptance from.³⁸¹ Rhine confessed that his conclusions ran counter to the known laws of nature. Such a stance was philosophically tenable, but as science either intolerably arrogant or simply heretical. Denunciations of Rhine in psychology journals stepped up when his second book became a Book of the Month Club selection and the Zenith Radio Corporation began a radio series about psychic phenomena that intentionally coincided with its publication. The radio shows included tests of the public's telepathic abilities and anecdotes about

³⁷⁹ Ibid, 40.

³⁸⁰ For example, Larry Laudan in *Progress and Its Problems* (Berkeley: University of California Press, 1977), distinguished empirical problems from conceptual problems in science, and noted that one category of the latter could be labeled "worldview problems," when a scientific theory "is in conflict with any component of the prevalent *world view*,"55.

³⁸¹ Moore, 220.

psychic occurrences, and encouraged audiences to purchase special E.S.P. cards that Rhine's lab was marketing. Though Rhine attempted to distance himself from the show, its Barnumesque flavor tarnished his enterprise. And yet, Rhine's effort at bridging science and the occult can also be viewed as a heroic undertaking.

Before looking at Rhine's work and its impact, it would be of value to briefly outline the history of psychic research. The first members of the Society for Psychical Research, founded in 1882, were intellectuals connected to Cambridge University in England. Henry Sidgwick, its founding president, was a professor of philosophy with a skeptical cast of mind. Another of its founders, Sidgwick's friend Frederic Myers, was a poet and a musician with a more romantic bent, tormented by his own agnosticism. Among the scientists and intellectuals who joined, there was a split between "doubters" and "believers," guaranteeing a controversy whenever any member declared he or she had witnessed a bona fide paranormal event.

William James, who helped found the American branch of the society and later served as the combined societies' second president, reflected the split between skeptic and believer within his own ample personality. He had been raised in the Swedenborgian Church, which followed the teachings of Swedish mystic and astral traveler Emanuel Swedenborg, so seemed a likely candidate for accepting spiritual phenomena as genuine. Despite this background, James professed agnosticism. He had a rigorous training in medicine, psychology, and

philosophy, and was no dupe like Sir Arthur Conan Doyle or other "true believers." The governing skepticism of leaders like Sidgwick and James ended up alienating convinced Spiritualist members such as biologist Alfred Russel Wallace, and he and other believers often left the ranks. Other early members included physicist Oliver Lodge, Lord Rayleigh, J.J. Thomson, Lewis Carroll, William Gladstone, Alfred, Lord Tennyson, and John Ruskin. Sigmund Freud subscribed to the Society's journal and eventually joined.³⁸² Freud's notion of the subconscious owed a great deal to the hypnotic studies of Janet and others who often published in the Proceedings of the Society for Psychical Research. Depth psychology was born of the studies of hypnotism and psychic research.

The Society for Psychical Research took as its founding statement in 1882 the following: "to investigate that large body of debatable phenomena designated by such terms as mesmeric, psychical and spiritualistic," and to do so "without prejudice or prepossession of any kind, and in the same spirit of exact and unimpassioned enquiry which has enabled Science to solve so many problems, once not less obscure nor less hotly debated."³⁸³ Committees were set up to investigate thought transference, hypnotism, apparitions, physical mediums, and Reichenbach's experiments in animal magnetism. Articles published in the society's Proceedings from the 1880s into the 1890s show research interests in

³⁸²Seymour H. Mauskopf and Michael R. McVaugh, in The Elusive Science (Baltimore: Johns Hopkins Press, 1980), indicate that Freud was only a subscriber, but in his essay of 1925, "The Occult Significance of Dreams," Freud indicates that he was a member of both the American and English societies. When he joined is not clear.

such topics as: "veridical hallucinations"—the warning messages or images which a person suffering grave injury or death might project to loved ones; spirit communication after death to the living; clairvoyance, the ability to see hidden or distant things; and telepathy, the ability to transmit thought from mind to mind. William James later likened their work to that of a "meteorological bureau" collecting data on sightings of ghosts, apparitions, and so on.³⁸⁴

But the early psychic researchers' true passion was to seek evidence for "survival" of the soul after death. Ghosts were somewhat uninteresting because these manifestations seemed "stuck" in fixed patterns that did not necessarily indicate survival of personality or intelligence. Telepathy, on its own or enhanced by hypnosis, was a curiosity but did not ultimately shed light on the question of "survival." Inevitably, these researchers were drawn to the work of psychic mediums in the hope of witnessing "evidential" phenomena of the survival of the personality after death.

By the 1890s, psychic researchers had categorized spiritualist mediums into two categories: physical and mental. Physical mediums presided at séances in dark rooms in which strange physical phenomena occurred: whether the sound of "rappings," table tipping, the appearance of strange lights, noises, voices, the apparently fleshy outgrowths from the spiritualist's body, or the emergence of

³⁸³ Gauld, 138.

³⁸⁴ James also used this method of subjective empiricism to base his defense of the religious life in Varieties of Religious Experience.

visible spirit bodies. The medium "Margery" or Mina Crandall, discussed in the previous chapter, is a superb example of a physical medium. Her helping spirit "Walter" theoretically was not just providing her information, but operating on the physical plane, ringing bells, tapping people's knees, leaving thumb-prints in wax and so on. Several decades of testing such mediums led to flurries of excitement, charges of fraud, and no conclusive results. Discussing such work, Freud remarked that in all likelihood "in occultism there is a core of facts...round which fraud and fantasy have woven a veil which is hard to penetrate."³⁸⁵

The psychical researchers' efforts to find genuine mediums made of them a professional "audience" of the séance-performance. No doubt the researcher's thrill from attending their first séance dulled after repeated exposures. Recognizing that little was to be gained by spending time in dark séance rooms, trying to keep track of a medium's hands, feet, neck, and movements, the SPR largely gave up chronicling physical mediums' doings and turned to "mental" mediums whose work consisted in providing messages from the spirit realm. They sought "evidential" information, that, if not available through fraud and trickery, would indicate a genuine paranormal power in the medium.

One of the greatest of the mental mediums, and the one most assiduously studied, tracked and investigated, was Leonora E. Piper of Boston. William James first discovered her in 1885, and to supplement his own sittings sent strangers to

³⁸⁵ Sigmund Freud, "Dreams and the Occult." In George Devereaux, ed., Psychoanalysis and the

her who used pseudonyms to try and determine if she turned up genuine, "evidential" material. James was convinced she did. In 1887, Richard Hodgson arrived, fresh from "busting" the enormously popular physical medium Eusapia Palladino. Mrs. Piper gave the highly-skeptical Australian native detailed information about his friends and relatives in Australia and eventually made of Hodgson a convert to Spiritualism.

When Piper was brought to England, James, Hodgson, Lodge, Sidgwick and Myers all agreed that she was the genuine article. When she related to Lodge an event he had no knowledge of concerning the childhood of one of his uncles, Lodge later verified the information and hired detectives to try to turn up the same information by asking questions. They failed. Throughout the 1890s, Hodgson conducted thousands of sessions with Piper. Private detectives frequently followed her to try to determine if she had a network of "spies" feeding her information. She eventually went on salary to the Society so they could even more carefully chart her work.³⁸⁶

James summed up the accomplishments of the society in 1896 by suggesting that psychic researchers no longer had a greater burden of proof than their skeptical opponents. Their meteorological bureau had turned up enough evidence to make their pursuit respectable, and specific reports, like those on Mrs.

Occult (New York: International Universities Press, 1970, 1953), 95.

³⁸⁶ After his death, Hodgson became one of Piper "controls," leading James to write a long inconclusive essay debating whether Hodgson was genuinely speaking through her. See William James, "Report on Mrs. Piper's Hodgson-Control," in James, Essays in Psychological Research.

Piper, tightened their case. He noted, "If you wish to upset the law that all crows are black, you mustn't seek to show that no crows are; it is enough if you prove one single crow to be white. My own white crow is Mrs. Piper."³⁸⁷ James argued that to dismiss such cases out of hand was to show a close-minded bias.

While proof of "survival" was the holy grail of James and other psychic researchers, telepathy had not been left out. Numerous experiments, apparently successful, at hypnosis at a distance were carried out and reported in the journals. In the early 1880s, Pierre Janet experimented with the famous hypnotic subject "Leonie" in Havre, France, and found he could often hypnotize her at distances up to 500 meters. At times, Leonie would carry out telepathically-given post-hypnotic suggestions.³⁸⁸ In this same decade Oliver Lodge, the British physicist, also wrote of his successful experiments with telepathy. The society's committee on thought transference investigated the Creery Sisters, who at first visit appeared to demonstrate telepathic abilities. A follow-up visit, however, revealed they were using elaborate signals. William James remarked that the investigations were a wash, even though "many of the earlier successes recorded of these children occurred when they were singly present...Collusion under such circumstances can not well be charged..."³⁸⁹

³⁸⁷ William James, "Address of the President before the Psychical Research Society" (1896). Essays in Psychical Research, 131. R. Laurence Moore relied on this speech for the title of his groundbreaking study of Spiritualism in America, In Search of White Crows.

³⁸⁸ George Devereaux, Psychoanalysis and the Occult, preface, xii.

³⁸⁹ William James, "Telepathy," 1895, 123.

Looking back at the Society for Psychical Research's investigations, Joseph Rhine felt that much of this evidence, however sketchy, was of value. After reviewing past experiments in telepathy, he remarked in his 1934 treatise Extra-Sensory Perception, "Curiously enough, however, the facts seemed to require proof over and over—many, many times."³⁹⁰ He was determined to be the last one to have to again prove telepathy, and, appropriate to the hero of a tale, he described this effort as his "quest."³⁹¹

"Is Sense Necessary?"

Rhine was born in 1895 in Ohio to a religious farming family. Early on, he had considered a career as a minister. However, he and his wife Louisa Banks decided instead to work toward careers in forestry, and received doctorates in botany at the University of Chicago. They became interested in psychic research after reading Bergson's Creative Evolution, which argued against a simple mechanistic worldview. The Rhines were also quite impressed by a lecture on Spiritualism that Conan Doyle gave in 1922.

Conflicted between his two interests, Rhine began teaching botany at the University of West Virginia, but left to pursue a career in psychic research. After several years of professional frustration, he received a Richard Hodgson

³⁹⁰ J.B. Rhine, Extra-Sensory Perception (Boston: Bruce Humphries Publishers: 1964), 25.

fellowship at Harvard. After sitting in on several of the medium "Margery's" seances in Boston and concluding she was a complete fraud, he broke off contact with the American Society for Psychical Research, which had championed her. In Cambridge he befriended Walter Franklin Prince, who had also left the American Society for Psychical Research over the "Margery" controversy. After a year in Cambridge, the Rhines had become rather skeptical about psychic phenomena. He wrote in an unpublished article, "I think too, we are tiring of chasing the Psychic Rainbow or the Philosophic pot of gold."³⁹² Soon after, though, visits to the mind-reading horse "Lady" and other endeavors gave the Rhines another glimpse of the rainbow. At its end was Duke University and the patronage of William McDougall. Rhine arrived at Duke at McDougall's instigation, made use of its facilities, took seminars, helped McDougall in his unorthodox research interests, and eventually was hired on.³⁹³

Shortly after his arrival at Duke, Rhine began the telepathy experiments that made his name and helped found parapsychology as a field. He and his colleague, psychologist Karl E. Zener, developed a set of 25 cards based on five simple symbols, destined to eventually take on near occult significance. The "Zener deck," later marketed commercially by Duke's parapsychology lab, with

³⁹¹ Ibid. Preface, xxviii.

³⁹² Quoted in Seymour H. Mauskopf and Michael R. McVaugh, 79.

³⁹³ McDougall was a Lamarckian and sought to prove that learned behavior could be inherited. Rhine helped him with an experiment in which generations of rats "learned" and passed on the knowledge of leaving a tub of water by a dark unlighted passage rather than a lighted passage that gave an electric shock. See Mauskopf and McVaugh, 82-4.

royalties accruing to Rhine, included a circle, a rectangle, a star, a "plus" sign (which also looks like a cross), and two wavy horizontal lines. In tests of clairvoyance, subjects were required to stare at the backs of each of 25 such cards taken off the deck and guess at its symbol. The odds for each correct answer were 1 in 5. Rhine further refined the clairvoyance test by placing screens between subjects and experimenters, and by requiring subjects to guess the entire sequence of the deck of 25 cards without any cards being removed or revealed.

In tests of telepathy, the experimenters "chose" a Zener symbol to think of and subjects had to guess what was in their mind. Again the odds were presumably 1 in 5. Telepathy tests, begun with subject and experimenter facing off across a table, later were refined with subject and experimenter in separate rooms, communicating only a 'ready' symbol with a telegraph key, and recording their results separately. Later, telepathy experiments were run with subject and experimenter in separate buildings, and at distances up to hundreds of miles from each other.

After three years of testing numerous subjects, Rhine published his findings as a book in 1934. Relying on mathematical formulas that could establish that his subjects' results were astronomically beyond the normal chance limits, he announced that he had established without a doubt the existence of E.S.P. He proposed that it was a common faculty, latent in most people, to be found in 1 of

5 students tested at Duke, and, presumably, similarly distributed in the general populace.³⁹⁴

Rhine's prize subject was a young Methodist ministry student at Duke named Hubert E. Pearce, Jr., whose mother was subject to occasional psychic experiences. Rhine described him as "sociable and approachable" and somewhat "artistic" with a particular interest in music. Pearce depicted himself as often having "hunches" but not otherwise aware of any psychic power. A photograph of Rhine working with Pearce shows Pearce hunched over, looking somewhat ruffled, while the taller Rhine sits calmly with pen poised, carriage erect. This photograph does not suggest that the laboratory was straining for good results. But Pearce offered them. After 10,300 calls for clairvoyance (412 times through the Zener deck), Pearce scored correctly on 3,746. 1 in 5 odds would have made his correct calls total only 2060. In clairvoyance, Pearce averaged 9.1 correct calls per 25.

These results were debatable as sometimes the experimenters indicated to Pearce every 5 cards how well he had been doing—perhaps hoping to help the subject "focus in" on his power, but inevitably helping him (consciously or subconsciously) make calculations regarding what cards might reasonably be expected to remain in the 25 card run. At other times, the entire deck of 25 was gone through, one by one, before results were checked. In the most carefully

³⁹⁴ Rhine, *New Frontiers of the Mind* (New York: Oxford University Press, 1977), 106.

guarded results, in which Pearce was required to guess the entire sequence of the deck without it ever being moved, after 1,625 cards (65 times through the Zener deck), he had guessed 482 correct, making his average 7.4 out of every 25 cards, well above chance. While "performing" before witnesses, including a magician, Wallace Lee, in 1932, out of 1,800 guesses, Pearce had 578 correct, a rate of 8.0 per 25.³⁹⁵ Rhine placed astronomical odds against such data being a result of chance.

In a sense, Rhine had brought a performance piece, that of the telepathy exhibition, into the laboratory. Perhaps giving credence to the Zancigs' claim that their strong affinity for one another aided telepathy, Rhine's "star" telepathy results came from a team of students engaged to be married, George Zirkle and Sara Ownbey. Flanking photographs of the couple in action create a scene reminiscent of promotions for the Zancigs. Zirkle (the "percipient") sits quietly in an armchair, eyes closed, face relaxed, while Miss Ownbey (the "agent") sits alertly at a table, a scoring sheet before her, her hand on a telegraph key prepared to signal that a new trial would begin. This team reversed the usual gender categories, and offered a dreamy, abstracted man receiving, while the brainy woman sent. With Ownbey as agent projecting thoughts and Zirkle receiving, Rhine announced that in 3,400 trials, Zirkle averaged 11.0 hits per 25. Rhine also had a loud electric fan running in the room to guard against the often-cited danger

³⁹⁵ My own calculation, based on data in "Table XIX", 102.

that "unconscious whispering" might account for such good results for telepathy. With a wall between them, separated by a distance of about 10 feet, Rhine reported Zirkle averaged 14.6 "hits" per 25 for a run of 750 trials. Separated by 30 feet with 2 walls between them, Zirkle averaged 16.0 hits per 25 for a run of 250 trials. Again, Rhine insisted that the odds of such a performance being due to chance were impossibly high.

Content that he had proven his case for both sorts of E.S.P., clairvoyance and telepathy, Rhine went on in his books to correlate the waxing and waning of this new power with a variety of factors, to offer possible explanations for the force, and to ponder its philosophical implications. Rhine's major contribution to the "mechanics" of E.S.P. was to rule it out as a form of electromagnetic energy, whether "brain waves" or some other unknown force. He also ruled out more occult or out-dated notions such as that of "Odic Force" originated by Baron Reichenbach to explain mesmerism and animal magnetism. Rhine was content to prove that E.S.P. existed and to let others argue about its mechanics, insisting, "Of first importance, perhaps, are the facts pointing to the absence of any yet known energy principle in E.S.P."³⁹⁶

To reject explanations that relied on radiation, Rhine began with the theory of physicist William Crookes, presented in 1897, that "telepathy might be due to high frequency vibrations of the ether generated by molecular action of the

³⁹⁶ Rhine, Extra-Sensory Perception, 117.

brain of the agent and received by the percipient's.³⁹⁷ Though this theory was helped by the detection of "brain waves," Rhine insisted that even if this could make sense for telepathy, it made no sense for clairvoyance. No "known radiation" was conceivable to explain how one card in a pile might emit energy to distinguish it from others. Rhine experimented with x-rays to show that even after 10 second exposures, x-rays could only indicate the dim outlines of a card itself, but not the ink markings on it. Likewise, the "angle" at which percipients sat to the card had no seeming influence as it might with faculties such as sight or sound. Rhine further argued that his experiments showed that clairvoyance and telepathy worked at least as well and perhaps better "at a distance" than they did close up. This seemingly defied the rules of wave radiation weakening in ratio to distance according to the "inverse square" law.

Rhine challenged physicists, stating, "if anything were known that *could* change one's responses that was not of the known energies, it would promptly be declared another kind of energy, because it 'does work' and 'effects change.' This would have to be done to save the coherence, unity and comprehensibility of our basic physics. At this point, we are, then, it seems, faced with the need of another order of energy, not radiant."³⁹⁸ He also reasoned that if causation without energy seemed impossible, researchers would be wise to "concede that that there is still

³⁹⁷ Rhine, Extra-Sensory Perception, 37.

³⁹⁸ *Ibid.*, 163.

possible growth in the basic concepts of the field" of physics.³⁹⁹ Perhaps wishing to avoid the appearance of being out of his depth, Rhine refused to speculate whether the new physics, based on quantum mechanics and relativity theory, could find a place for E.S.P. In 1937, going over these same results, he suggested that his research supported McDougall's contention that "in mental processes a non-mechanical and, as he calls it, teleological but not mystical mode of causation is in operation."⁴⁰⁰

Unable to explain the mechanics of E.S.P., Rhine was happy to suggest how it was most easily evoked in subjects. Most of these generalizations opened him up to charges that they were post-hoc rationalizations. Regardless, he insisted that to get best results, a subject had to be interested, and not bored by the proceedings, and had to believe E.S.P. an inherent capacity. Likewise, caffeine was shown to stimulate flagging E.S.P., while depressants decreased its effectiveness. The subject should be "relaxed" but also in a state of "concentration." His laboratory workers had the right attitude of curiosity and excitement to encourage such bashful phenomena as E.S.P. Rhine insisted that in those early years, he had the cooperation of the entire psychology department. "We knew we had something by the tail that was too big for all of us, but we were

³⁹⁹ Ibid., 14.

⁴⁰⁰ Rhine, New Frontiers, 212.

having riotous fun pulling and holding on, twisting and prying, to get a better hold, a further advantage, a more complete capture."⁴⁰¹

Rhine's speculations became more cosmic in his book's conclusion. E.S.P., he argued, helped establish the "non-physical" nature of mind. The E.S.P. percipient's mind relied on a "peculiarly non-mechanistic procedure."⁴⁰² He noted that E.S.P. was not "space-bound" and probably not "time bound"—making precognition or prophecy possible. He also gave some credence to the tenets of Spiritualists. "If the percipient's mind is, as hypothetically suggested in Chapter XII, a relatively free agent that can, under certain conditions, go out space free, escaping material limitations, it might well be expected to be able to find in this spaceless order of reality whatever (if any) strange forces or entities there may be. If there are incorporeal personalities, it could 'contact' them. If there are reservoirs of knowledge, it might tap them, by a more transcendent clairvoyance."⁴⁰³

Rhine repeated this notion in his next book, New Frontiers of the Mind (1937), tailored to a more popular audience, saying that there was no proof of survival of the soul after death, but that "What we have so far found in the ESP research would be at least favorable to the *possibility* of survival of personality after death."⁴⁰⁴ ESP research could at least assure us that non-corporeal entities

⁴⁰¹ From 1964 preface to Extra-Sensory Perception, xxxv.

⁴⁰² Rhine, Extra-Sensory Perception, 222.

⁴⁰³ Rhine, Extra-Sensory Perception, 203-04. This quote was not a new addition to the 1964 edition, but can also be found in the original. See Extra-Sensory Perception (London: Faber and Faber Limited, 1935), 207.

⁴⁰⁴ J.B. Rhine, New Frontiers, 249.

might have some method of communicating with each other and with corporeal personalities, that is, mediums.

Reactions to Rhine's first volume, published, presumably in small numbers, by the Boston Society for Psychological Research, was somewhat limited. A few academic attacks on Rhine's mathematics and procedures were launched in 1934 and 1935, while his proponents, including a leading statistician, mounted defenses. Newspaper science writers lauded his work and suggested that it gibed well with the model of the universe that the new physics had established which was equally anti-mechanistic. Rhine's second book, aimed at a popular market, stirred up far greater interest and controversy. His publisher coincided the book's release with the first broadcasts of Zenith Broadcasting Corporation's weekly radio series on psychic experiences, which included on-air promotions of Rhine's work, and of his Zener cards. Duke University president William Preston Few, however, persuaded Rhine not to accept any official advisory position with the broadcasts.⁴⁰⁵

A Book of the Month Club selection in October 1937, this second book, New Frontiers of the Mind: The Story of the Duke Experiments, sold 150,000 copies and provoked dozens of critiques and defenses both in academic and popular periodicals. Time was able to report on the "Rhine Question" in early October 1937 and follow that story with "Battle on Rhine" the following April. In

⁴⁰⁵ Mauskopf and McVaugh, 161-62.

American Scholar, in the Spring 1938 issue, Rhine-supporter Gardner Murphy, a professor of psychology at Columbia University who had also been a Hodgson Fellow at Harvard, wrote "Dr. Rhine and the Mind's Eye," praising Rhine's exploration of "non-material" notions of mind, while Joseph Jastrow responded in a later issue of American Scholar with "ESP, House of Cards," which belittled Rhine's procedures, results and conclusions and labeled him "irresponsible" and his book "educationally deplorable."⁴⁰⁶

Among Rhine's first academic critics was psychologist Raymond Royce Willoughby of Clark University, who questioned the mathematical validity of Rhine's work.⁴⁰⁷ He was also the first to insist that tests in which cards were checked verbally after 5 guesses could influence results.⁴⁰⁸ Attempting to duplicate Rhine's work, Willoughby also reported that the recorders often became confused with the Zener symbols and might record "Star" for "Circle" prompted by the first sound of the word. Another critique, by Chester E. Kellog of McGill University, likewise questioned Rhine's math and criticized him for limiting his statistics to "favorable" instances, while dropping from further testing subjects whose data was not above chance.⁴⁰⁹

⁴⁰⁶ Joseph Jastrow, "ESP, House of Cards," American Scholar 8, no.1, January 1939, 22.

⁴⁰⁷ R.R. Willoughby, "Prerequisites for a Clairvoyance Hypothesis," Journal of Applied Psychology, 19, 1935, 543-550.

⁴⁰⁸ R.R. Willoughby, "A Critique of Rhine's "Extra-Sensory Perception," Journal of Abnormal and Social Psychology, 30 no.2, 1935, 202-3.

⁴⁰⁹ C.E. Kellog, "Dr. J.B. Rhine and Extra-Sensory Perception," Journal of Abnormal Psychology, 31, 1936, 216-228.

Not surprisingly, Rhine's book and the surrounding publicity stimulated an annoyed response from Behaviorists. B.F. Skinner wrote an irritable review of New Frontiers of the Mind for Saturday Review under the title "Is Sense Necessary?" Skinner first gave Rhine credit, noting "he has taken a disputed subject matter out of the realm of casual observation and anecdote into the experimental laboratory."⁴¹⁰ He went on, however, to repeat Kellog's and Willoughby's charges, to posit the possibility that the experimenters may have suffered "hypnotic delusions," and to question Rhine's "apparent" refusal to allow "accredited scientists" to observe his laboratory. Skinner also mentions that Rhine was clearly "biased" and let "anecdotes set the tone of the book." Skinner found greatly irritating Rhine's habit of "explaining away" bad results, as the parapsychologist theorized how sleepiness, boredom, illness, emotional upset or the entry of strangers to the laboratory adversely affected subjects. All this showed that Rhine made the grievous error of "presupposing what he undertakes to prove." Skinner concluded that "When a supposed fact is so prodigiously at odds with established knowledge as extra-sensory perception, the proof required is proportionately greater...minimum requirements of proof have hardly been approached."⁴¹¹

When Rhine's use of probability was defended by several published reports from mathematicians, critics shifted tactics. Dael L. Wolfle of the

⁴¹⁰ B.F. Skinner, "Is Sense Necessary?" Saturday Review. October, 9, 1937, 5.

University of Chicago allowed Rhine his mathematical premises, and also said he saw nothing wrong with Rhine selecting subjects on the basis of how well they scored on screenings. "If extra-sensory perception is an ability possessed by only a part of the population, Rhine has a perfect right to select that part for study."⁴¹² Wolfe's critique then combined ridicule with skepticism about Rhine's precision. The "fruits of Rhine's work" included a "widespread revival of interest in the occult" and the "weekly radio program."⁴¹³ Shifting to ad hominem tactics, Wolfe stressed Rhine's background in "forestry" and his reported desire to live a "free and natural life," and complained that Rhine was not a member of the American Psychological Association. More seriously, Wolfe pointed out that few other researchers had confirmed Rhine's works. He also stressed the possibility that unconscious cues might be involved, noting that "scoring [was] highest when sensory cue possibilities were greatest."

Another critic, Harold Gulliksen, belittled Rhine's popular appeal, his Book of the Month Club connections, and the "What-Is It?" motto of the Zenith broadcasts.⁴¹⁴ Gulliksen admitted the case was not closed—eight laboratories had confirmed Rhine's results while six did not—and then focused his critique on the clerical methods used at Duke, making a fairly convincing case that some of the

⁴¹¹ Ibid., 5-6.

⁴¹² Dael L. Wolfe, "Extra Sensory Perception," The American Journal of Psychiatry, 94, no. 4, January, 1938, 947.

⁴¹³ Wolfe, 943.

⁴¹⁴ Harold O. Gulliksen, "Extra-Sensory Perception: What Is It?" The American Journal of Sociology, 43, no. 4, January, 1938, 623.

positive results might be due to unintentional errors. When percipients "called aloud" guesses, recorders could conceivably mark their answers wrong. Even if attempting to honestly record answers, they had incentive to occasionally "hear wrong" in favor of a positive result. Rhine's descriptions of methods used were vague, sometimes requiring answers to be written by both experimenter and subject, sometimes relying on verbal calls. "It is characteristic of Rhine's reporting that one cannot always tell which method was used."

Gulliksen, like Wofle and other critics, also delved into the literature to question Rhine's conclusions about the genuineness of the horse "Lady's" telepathic powers. After Rhine had returned to "Lady" and discovered her responding to cues from her trainer, he did not conclude that the horse had always been a fraud, but instead insisted that this only proved that Lady had since lost her telepathic abilities and that her trainer was desperate. Gulliksen quotes Rhine stating, "It is a poor kind of cheating which grows worse with practice." Gulliksen then responds, "it is a poor kind of observation that doesn't increase in acuity as it proceeds, possibly discovering trickery not at first noticed."⁴¹⁵

Gulliksen also belittled Rhine for encouraging experimenters to use the "official, Rhine-patented, Duke laboratory of parapsychology ESP cards" available in bookstores and stationary stores. Gulliksen remarked that B.F. Skinner had noticed that "the figure printed on the [official] card can, under

⁴¹⁵ Ibid., 630.

favorable lighting conditions, be read from the back as well as the front of the card."⁴¹⁶ He closed his article with valid complaints about Rhine's equivocations, for example, at one point stating that ESP abilities close up or at a distance are the same, while at another stating that ESP abilities improve with distance. Gulliksen noted, "Scientific work may be either good or bad independently of contradictions of this type. However, such contradictory statements tend to diminish rather than enhance, the scientific prestige of an experiment."⁴¹⁷

In 1938, the year after New Frontiers of the Mind was published, the eastern branch of the American Psychological Association also took up the controversy at its conference. Time reported that at the meeting "three papers were read on the Rhine question, all of them hostile." Time also remarked that Stuart Henderson Britt showed how Duke's ESP cards could be read from the backs by sight or touch and "proved this point when he correctly read 24 out of 25 ESP cards whose faces he could not see. Psychological chuckles filled the hall as he did so."⁴¹⁸

Finally, some detractors based their critiques less on scientific grounds than on political grounds. Norbert Guterman's critique in the New Republic forces us to recall that Rhine's scientific research and the popular interest in E.S.P. that it incited took place in the politically volatile years of the Depression. Guterman

⁴¹⁶ Gulliksen, 628.

⁴¹⁷ Ibid., 629.

⁴¹⁸ "Battle on Rhine," Time, 11 April, 1938, 54.

wrote, with some anger, "What first strikes the reader of Dr. Rhine's book is the great disproportion between these monotonous, not to say trivial, "readings" of cards, and the extraordinary hopes they have aroused. The innumerable groups in this country who practise occult sciences responded to them with enthusiasm."⁴¹⁹ At least temperamentally an activist, Guterman went on to express his hope that ESP research would not become a "national pastime" and to insist that Rhine was reasserting a "passive" model of the mind that encouraged helplessness before social forces. He concluded, "The 'scientific' language used by the latest variety of psychic research must not hide from us the fact that its social thinking is on the same backward level." Along the same lines, Joseph Jastrow wrote in American Scholar that "the social responsibility for misleading the public into the belief that telepathy has been established is serious....[and]educationally deplorable."⁴²⁰

Yet responses to Rhine's work were not all hostile. One of Rhine's great defenders was the Scientific American and its publisher Orson D. Munn. The Scientific American, which had offered prize money to successful Spiritualists in the 1920s, began running articles about telepathy in the early 1930s that took the matter quite seriously. Walter Franklin Prince published a favorable review of novelist Upton Sinclair's Mental Radio in the magazine in 1932. Sinclair's book described experiments in telepathy he had devised for his wife. These included matched drawings of images she had made as "percipient" while Sinclair or

⁴¹⁹ Norbert Guterman, "Frontiers of Credulity," New Republic, 17 November, 1937, 49.

others, acting as "agents," concentrated on objects. Foreshadowing the Zenith Broadcasting Corporation's semi-farcical telepathy tests, in 1933 Scientific American printed a series of public "tests" of its reader's telepathic abilities. Readers were asked to fill out forms and return them for tabulation. Experts on Scientific American's panel, which included psychic researcher Prince, Columbia psychologist Gardner Murphy, and professional mind reader Joseph Dunninger, concluded that the first test results "show something that cannot be ascribed to pure chance."⁴²¹ The second test suggested that Scientific American readers lacked E.S.P. The magazine bowed out of the testing business, concluding their readers did not "have it." In a slightly peevish sidenote, the editors complained that though they had asked "agents" to project "the name of some simple and familiar object which he can readily visualize," many readers chose to project such phrases as "bootlegger," "your life's ambition," "pain,"⁴²² "free love," and "wind."⁴²³ Scientific American then brought to a close its "active participation in research for telepathy" but still presented the topic even-handedly.

Though their own tests were a flop, Munn gave Rhine's Duke experiments glowing coverage. In 1934, Prince wrote an article for Munn describing Rhine's remarkable results at Duke.⁴²⁴ The following year, Munn ran an article by Rhine

⁴²⁰ Joseph Jastrow, "ESP, House of Cards," American Scholar, Winter 1938-1939, 22.

⁴²¹ "The Results of Our First Test of Telepathy," Scientific American, July, 1933, 10.

⁴²² "Our Second Test of Telepathy," Scientific American, September, 1933, 108.

⁴²³ "Test for Telepathy," Scientific American, February, 1934, 64.

⁴²⁴ Walter Franklin Prince, "Extra-Sensory Perception," Scientific American, July, 1934, 5-7.

describing his E.S.P. tests on the British spiritualist medium Eileen Garrett. Rhine's findings were that she was endowed with E.S.P.—but not as impressively as some of his home-grown subjects at Duke. In the article, Rhine typically went out on a limb to state that his E.S.P. findings had “a positive bearing on the spirit hypothesis.”⁴²⁵ And in June 1937, when Rhine's first book had already stirred up controversy, Scientific American ran a short editorial, “Telepathy Comes of Age,” that stated that Rhine had come to the rescue of psychic science, once the “Orphan Annie in the psychological and therefore the whole scientific world.” But now, Rhine's work was “winning a place in the sun for that science.”⁴²⁶ And in 1938, when the “Battle on Rhine” had begun in earnest, Scientific American let Rhine defend his methods—both his mathematical procedures and his results—which he insisted held even when whittled down to include only tests which were absolutely “cue proof.”⁴²⁷

Along with Scientific American's endorsement of psychic research and parapsychology was a laudatory article about Rhine in Popular Science Monthly, “Can We Read Each Other's Minds?” The writer framed his look at scientific research with the sort of anecdotal evidence that drove academics like B.F. Skinner wild. The author highlighted Rhine, but also mentioned the successful work of investigators such as J.E. Coover of Stanford, Gardner Murphy at

⁴²⁵ J.B. Rhine, “Telepathy and Clairvoyance in a Trance Medium,” Scientific American, July, 1935, 12-14.

⁴²⁶ “Telepathy Comes of Age,” Scientific American, June 1937, 361.

Columbia, and G.W. Estabrooks at Harvard. In light of the training advice given in many manuals teaching telepathy, at least one of Coover's Stanford experiments is worth mentioning—he arranged to have ten subjects who believed they could sense when “anyone stared at them from behind.” He situated the subjects with backs turned to him and told them to record whether they were being looked at at a given signal. He tested each student 100 times. The results showed the answers were rarely correct, and, contrary to the training regimens that mind readers like Zancig and later performer Joseph Dunninger encouraged in their students, “there is little to substantiate the common belief that we can ‘feel’ the stares of others.”⁴²⁸ The author goes on to describe Rhine's work and a visit to his laboratory and concludes that the investigations “form an important milestone.”⁴²⁹

While endorsements from the Scientific American and Popular Science Monthly would not impress B.F. Skinner or Rhine's other academic antagonists, they are nevertheless revealing, as other popular science magazines promoted a narrowly materialistic vision. Such a stance had imbued Hugo Gernsback's Science and Invention magazine of the 1910s and 1920s, which took a hostile

⁴²⁷J.B. Rhine, “ESP, What Precautions Are Being Taken...?” Scientific American, June 1948, 328.

⁴²⁸ Edwin Teale, “Can We Read Each Other's Minds?” Popular Science Monthly, 130, no.3, March 1937, 28. Dunninger insisted that he not only practiced on strangers in movie theatres, but also on elevator operators, occasionally saying the wrong number while thinking the right number, or saying no number at all—invariably the operator would stop. See Joseph Dunninger, What's On Your Mind? (Cleveland: World Publishing Company, 1944), 47-8.

⁴²⁹ Teale, 109.

stance to psychic phenomena. While Munn let Rhine discuss his work with a medium in Scientific American, Gernsback's earlier article, "Can the Dead Be Reunited?," ridiculed such notions. It began with such premises as "let us assume the souls of men are only as large as an ant," and, "with ten trillion souls abounding somewhere above the planet, it must be assumed that there would be practically no standing room."⁴³⁰ From the premise that souls would then have to wander through outer space, Gernsback concluded that "your odds of getting a royal flush, are 16,686,166 times better than your chances of communicating with a particular soul." Clearly such a crudely materialistic mode of speculating was more in line with the beliefs of B.F. Skinner than with those of J.B. Rhine or Walter Franklin Prince. The debate in the academic world had its counterpart in the realm of popular science forums.

Behaviorism Versus the Other-Dimensional Mind

How was Rhine defended by fellow academics? In a manner that suggests that the main contention was: who is really showing bias here, the psychic researchers or the mechanistic hardliners? One defender depicted the views of Skinner, Willoughby, and other Rhine critics as being akin to that of a farmer who after insisting a large airplane could not fly, watched it take off, only to respond,

⁴³⁰ Hugo Gernsback, "Can the Dead Be Reunited?" Science and Invention, April, 1926, 1089.

“I won’t believe it anyway.” This author, Howard Holboyd, insisted that the phenomenon of E.S.P. was susceptible to the statistical verification Rhine had produced. Holboyd again employed an analogy, arguing, “In such cases as throwing loaded dice, the probability that they are not loaded may be made arbitrarily small by throwing them enough times and observing the results.”⁴³¹ He went on to differ with Rhine and argue that there must be some radiation-based explanation for E.S.P.

Vernon Lemmon of Washington University opened his defense by remarking that Rhine’s work stirred resentment because the stereotypical answers that psychologists could once give regarding E.S.P., i.e. we “are not interested,” or “carefully controlled experiments have yielded negative results,” would no longer hold.⁴³² He went on to defend Rhine’s use of probability, and his decision to “winnow” subjects, remarking, “if you are studying maze learning in rats, you are justified in rejecting crippled or diseased rats, or in fact, any that seem unlikely to show any learning ability.”⁴³³ He directly rebuffs Skinner’s critique by noting that “the first psychologist ever to study maze learning was not deterred by the thought that to look for it was to assume its existence in advance.”⁴³⁴ Even Rhine’s decision to stop testing when a subject was growing fatigued could be

⁴³¹ Howard Holroyd, “On the A Priori Probability of Telepathy,” Journal of Abnormal Psychology, 31, no. 2, 1936, 115.

⁴³² Vernon W. Lemmon, Extra-Sensory Perception, Journal of Psychology, vol 4, 1937, 227.

⁴³³ *Ibid.*, 230

⁴³⁴ *Ibid.*

justified, for “in a learning experiment it is usual to stop work on a subject when he shows signs of undue fatigue, or when external distractions show signs of interfering with his performance.”⁴³⁵

Lemmon concludes by showing his distaste, as did Holboyd, for Rhine’s complete rejection of a radiation theory of E.S.P., calling the alternatives “if not frankly mystical...[then] repugnant to the scientific mind.”⁴³⁶ He remarks that in the recent past radioactivity, radio waves, and cosmic rays had not been known of and Rhine’s experiments with x-rays were not conclusive, especially as “it has recently been demonstrated that ordinarily inactive bodies can emit considerable quantities of energy as a result of cosmic ray bombardment.”⁴³⁷ Like several newspaper science writers before him, Lemmon turns to quantum mechanics to bolster a theory of E.S.P. based in physics. Lemmon starts from the premise that if a single quantum of energy is needed to induce a telepathic reaction, distance will not be a factor, since a quantum departing remains a quantum when it arrives regardless of distance. He cites one experiment that established that the energy equivalent to a single quantum of green light would be enough to arouse a physiological response.⁴³⁸ He also notes that physicists had recently posited that “No energy ever starts from a source until a receiver is ready for it.” With this

⁴³⁵ Ibid., 231.

⁴³⁶ Ibid., 232.

⁴³⁷ Ibid., 236.

⁴³⁸ Ibid., 235.

assumption, “If A and B are mutually ready for a transfer of energy, it will occur regardless of distance.”

Finally, Gardner Murphy of Columbia University, another former Hodgson Fellow and student of McDougall, staunchly defended Rhine's work, relying on the anti-mechanistic values of the older psychic researchers. Murphy depicted Rhine's work as an important victory in the ongoing war that open-minded researchers were waging against the mechanistic worldview that moderns inherited from the Enlightenment. Murphy praised Rhine's work and insisted that confirming experiments had been conducted at the University of Colorado, Fordham University, New York University, Hunter College, Columbia University, and Tarkio College, and in investigations by six other groups outside the academy. He also insisted that B.F. Skinner's discovery that some decks could be read from both sides of the card wasn't devastating since “all the serious work emphasized by Dr. Rhine and his followers has been carried on with cards out of the reach of the senses....in the critical tests *neither* [side of the card] is seen.”⁴³⁹ Murphy concluded that Rhine's opponents were entrapped in a world view that blocked them from accepting evidence contradicting its tenets. They were in the position of Holboyd's farmer who saw the heavy airplane take off and still insisted it couldn't fly. Murphy likened research into extra-sensory perception to Archimedes's lever that could move the world. In this case the lever's action

would involve replacing “17th-century naïve mechanism by other conceptions more characteristic of 20th-century scientific adventure.”⁴⁴⁰

Murphy's stance was in the tradition of William James, who frequently argued that scientific "absolutism" was ultimately based on faith or taste and not on rationality.⁴⁴¹ Such skepticism required its adepts to deny the validity of any experiments that produced facts that seemed contrary to natural laws. Often such distinctions were based on taste and not reason. James admitted that “the excesses to which the romantic and personal view of Nature may lead...are direful,” like the "Mumbo-jumboism" of Central Africa. But James added, "the oftener one is forced to reject an alleged sort of fact by the method of falling back on the mere presumption that it can't be true because so far as we know Nature, Nature runs altogether the other way, the weaker does the presumption itself get to be."⁴⁴² To James, a priori mechanistic convictions or a more religious world view will color judgements.

James's elegant—though clearly Eurocentric—humanism placed him in the same camp as some unsavory characters, such as Le Roi Crandon, husband of the Boston medium Mina "Margery" Crandon. When William McDougall admitted to confusion about how Mina (Margery) or her spirit guide had rung a

⁴³⁹ Gardner Murphy, “Dr. Rhine and the Mind’s Eye,” American Scholar, vol. 7, no. 7, Spring 1938, 200.

⁴⁴⁰ Ibid.

⁴⁴¹ William James, "The Will to Believe." In Hollinger and Capper, The American Intellectual Tradition: Vol. II. New York: Oxford University Press, 1989, 80-93.

bell during a 1920s séance, Crandon quoted the psychologist as saying, "He replied he was not yet prepared to say that there was no normal means by which the bell could have been rung as described... but that he could think of no way, adding, 'If I put my name to a statement declaring that to be psychic, I should overturn the philosophy of my life.'"⁴⁴³ In this case McDougall—in retrospect, it appears wisely—had stuck to his skeptical instincts. He wrote to Crandon that he was in the position of "one who observes a physical phenomena which one cannot explain and for the explanation of which one cannot conceive a physical or normal explanation, but one is not in a position to assert that such an explanation is impossible."⁴⁴⁴ Though he spoke to Crandon as a fellow gentleman, McDougall doubted Margery's miracles. He was not ready in this case to move on to what he called the next stage of conviction, which would be that of one who "observes physical phenomena and is convinced that any normal physical explanation is impossible and therefore believes that it is supernormally produced."⁴⁴⁵

The problem of keeping company with occultists like Crandon also gave Freud pause. Noting that psychoanalysis was still "suspected" of mysticism, Freud had first cautioned his followers away from accepting a phenomenon like telepathy until it could be explained mechanically, lest such an admission open the door to other occult beliefs. To Freud, the occult explanation put one's critical

⁴⁴² William James, "Address of the President before the Psychical Research Society," 1895. In Essays in Psychical Research, 130.

⁴⁴³ Le Roi Crandon to Arthur Conan Doyle, 24 October, 1924. HRHRC.

faculties to sleep, helped falsify perception and forced one to agree regardless of confirmation.⁴⁴⁶ Later, Freud inched cautiously towards a more open-minded stance, noting, "it seems to me that one is displaying no great trust in science if one cannot rely on it to accept and deal with an occult hypothesis that may turn out to be correct."⁴⁴⁷

Rhine's detractors viewed his work with a skepticism similar to that with which McDougall or Freud might regard the Crandons of the world. Even if Rhine's sincerity were presumed, his motives and findings were suspect. Here Rhine's peers were confronting two "fishy" issues. The first was the very hypothesis of E.S.P. as a possible faculty, and the second the possible subjectivity of the findings. Though James insisted that only one white crow was necessary to make the case for psychic phenomena, conviction will be strongest if the white crow appears at one's own window. James found his white crow only after searching for it himself to fulfill his own needs. Reports of white crow sightings in other laboratories (or parlors) would not have held as much weight to him, and even less to complete skeptics.

George M. Beard explained that since the whole notion of one mind transferring a thought to another without using sensory channels was contrary to nature, he had been led to the correct theory in the case of entertainers like Brown

⁴⁴⁴ William McDougall to Le Roi Crandon, 11, November, 1926. HRHRC.

⁴⁴⁵ Ibid.

and Bishop, that they were using "muscle reading" not "mind reading." He argued that if we insist on the broader principle that human beings' capacities differ only in "degree" and not in "kind," we can rule out telepathy. "Mind-reading, in the usual meaning of the term, is a faculty that in any degree does not belong—indeed, it is never claimed that it belongs—to the human race, it cannot, therefore, belong to an individual."⁴⁴⁸ He went on to argue that because of this, "for one person to read the thoughts of another would be as much a violation or apparent violation of the laws of Nature as the demonstration of perpetual motion, the turning of iron into gold, or the rising of the sun in the west."

In 1877, Beard had anticipated the position that Skinner and other critics would tend to sixty years later after Rhine published his results. And it may precisely be due to Beard's axiom—that humans can only differ in a manner of "degree" but not "kind"—that Rhine was led to assert that E.S.P. was in fact a faculty latent in all people. He and science fiction writers seemed to see this ability emerging in a new evolutionary stage. Freud worked from the same assumption when he later argued the opposite proposition, that telepathy, if it existed, was most likely an evolutionary throwback, likening it to the manner in which insects, antennae and all, might communicate.⁴⁴⁹

⁴⁴⁶ Sigmund Freud, "Dreams and the Occult." In George Devereaux, editor, Psychoanalysis and the Occult, 93.

⁴⁴⁷ *Ibid.*, 108.

⁴⁴⁸ George M. Beard, "Physiology of Mind Reading," 472.

⁴⁴⁹ Freud, "Dreams and the Occult," 108.

If the skeptics' assumption that the hypothesis of E.S.P. was in itself fishy seems close-minded, their questions about its seeming subjectivity provided stronger grounds for pointing out hypothetical flaws in all of Rhine's methods. Rhine, like earlier adherents of Spiritualism, admitted that psychic phenomena, in general, was "bashful" and had to be encouraged to emerge. Subjects had to be relaxed, confident and encouraged. Unsympathetic researchers, like Willoughby, were unlikely to find it. Rhine's results would most likely be reproduced by other individuals with the same instinct for a religious or romantic worldview.

Skinner and other diehard materialists undoubtedly were biased, yet their conservatism seems reasonable. Reversing Gardner Murphy's metaphor, skeptics could argue that E.S.P. research was really a lever for reintroducing superstition and mysticism into the world. What appeared to be facts to Rhine and his supporters, to detractors, by definition, had to stem from flawed experiments. To them, Rhine's efforts to create scientific proof of mystic phenomena were similar to the efforts of Renaissance anatomists to find the physiological seat of the "soul" in the human body. Charles Fort, a critic of science whose ideas became faddish during the 1920s, pinpointed the aversion rationalists might have towards the psychic with his remark, "if science shall eventually give in to the psychic, it would be no more legitimate to explain the immaterial in terms of the material

than to explain the material in terms of the immaterial."⁴⁵⁰ The impulse to establish a romantic science contained the seeds of its own failure, as the impulses towards an orderly, rational universe and a “live” or spontaneous universe did not appear compatible.

Others, like Freud, and Rhine's supporters Lemmon and Holboyd, took middle positions. They reasoned that a mechanical explanation for telepathy must eventually emerge. In such a way, Rhine's strategy could be likened, however humbly, to Newton's decision to add the notion of "force at a distance" as an assumption he did not have to justify in his theory of gravitation. While contemporary mechanists called the operation of force at a distance a throwback to the occult, Newton insisted that if such an assumption led to simple, universal mathematical laws, it was better to add force at a distance without even trying to explain why it might emerge.

Rhine, who wished to add the "occult"—or in his preferred term, “teleological” force of E.S.P. to the modern world view, like Newton attempted to establish quantitative rules which telepathy followed. Rhine hypothesized this faculty was strongest at the beginning of the session, determined that it could be depressed with sodium amyl and revived with caffeine, and found that E.S.P. could be affected by illness, by the appearance of strangers, and so on. Many of his critics found such "rules" to be merely ad hoc explanations of failures. And, in

⁴⁵⁰ Charles Fort, The Book of the Damned (New York: Henry Holt and Company, 1941 [1919]),

fact, Rhine was not really positing a new force in a mechanistic world. He proposed instead that mind operated in another "dimension" unbounded by time and space. This was a revolutionary idea, and far easier to reject than Newton's revolutionary ideas. Newton's conception of "force at a distance" helped explain the movement of the planets, comets, tides, and cannonballs; all that Rhine specifically could explain was some seemingly good guessing results at cards. For mechanists, whose entire worldview was threatened by Rhine's data, it was far easier to assume this good guessing was the result of error, delusion or luck.

Many of Rhine's backers attempted to show how the New Physics might ride in to rescue the romantic science project of the nineteenth century and Rhine's "dimensional" explanation. According to such defenders "subjective" science was no longer an oxymoron. The New Physics, well established by the 1920s, insisted that subjectivity was built into the scientific process—at least on the quantum level. Light could be thought of as a wave or as a particle, depending on one's mathematical needs. Mass could be redefined as energy. Heisenberg's principle implied that verification had very real limits and at the quantum level interfered with outcomes. The mechanistic universe, once firmly outlined, was becoming sketchier. Perhaps Gardner Murphy was right in demanding a new conception of mind in keeping with the continually opening "adventure" that psychology and physics were undergoing.

A Showman Responds

However great his integrity and courage, Rhine needed private contributions both to endow and maintain his parapsychology lab, and to do so, he became something of a showman. His decision to let Zenith Broadcasting and his publisher hawk E.S.P. cards that he held copyrights to could only hurt his reputation as a diligent, sober scientist. His decision to market his lab's "product" made his science share characteristics with the artistry of Barnum and no doubt gave great encouragement not only to sober parapsychologists and psychic researchers but also to occultists and professional mind readers.

Rhine also ventured into penning popular articles for Forum and other magazines. In such articles, Rhine made no effort to rely on a sophisticated, above-the-fray tone. With titles such as "Are We 'Psychic' Beings?," "The Practical Side of Psychism," "The Gift of Prophecy," "The Evidence for Prophecy," and "Don't Fool Yourself," Rhine created his own version of psychic research "goes pop." He valorized his own work and also included much anecdotal evidence, guaranteed to please popular readers and drive critics into a frenzy. One article concluded with the editorial note: "Professor Rhine is preparing further papers on the scientific investigation of clairvoyance and survival after death."⁴⁵¹ He employed popular vernacular to make such

⁴⁵¹ J.B. Rhine, "Are We Psychic Beings?" The Forum, vol. 92, no.6, December, 1934, 372.

pronouncements as "To the genuine sportsman, in this jungle of the mind, I am sure the high frequency of danger only adds to the zest."⁴⁵² Such articles may have increased his celebrity-status, but clearly diminished his scientific status.

Rhine helped found parapsychology in America, but it has led a troubled existence ever since. Rhine himself became ostracized by his peers at Duke. His desire to be the last to ever have to prove again the reality of such faculties as telepathy and clairvoyance was not realized. In a sense, the main beneficiaries of "The Battle on Rhine" were performers. On vaudeville stages, and on the newly-opened venue of the radio broadcast, mind readers—exhibiting success rates far more spectacular than those in Rhine's laboratory—continued to boost the possibility of "new frontiers" to be explored and exploited.

Rhine's doppelganger, his pure show business shadow, was Joseph Dunninger, the leading America stage mind reader after Julius and Agnes Zancig. Dunninger, born in 1892, began as a magician, and so largely avoided the wrath of magicians even when he presented his stage faking as genuine E.S.P. He had been an acquaintance of Houdini's, a fellow buster of Spiritualists, holder of the dubious honor of being the first to hypnotize a subject via radio, the author of a pamphlet that gave instructions on "how to hypnotize a parrot," and one of the judges on the Scientific American's telepathy panel in the early 1930s. His articles about phony spiritualists were amusing and humane, as when he described a black

⁴⁵² J.B. Rhine, "Don't Fool Yourself," The Forum vol. 94, no. 3, September, 1935, 189.

female medium in Georgia who, after collecting a \$10 fee, answered his hidden question, "How much money do I have in my wallet?" with "Ten dollars less than you came in with."

More bold than Zancig, perhaps because he feared less the attacks of magicians, Dunninger insisted that he had powers of "hypnotic clairvoyance."⁴⁵³ A few years after the Zenith Broadcasting Corporation's show on psychic testing concluded, Dunninger went on the air in 1943 with a half hour NBC network mind reading show on WJZ in New York, which began with the tag: "Who is Dunninger? The Man with the Miracle Mind." He later brought his act to television. Unlike Rhine's subjects, who could guess 9 out of 25 cards correctly, Dunninger was almost always right. John J. O'Neill, a prominent science writer—and Tesla's first biographer—tested Dunninger with playing cards and found him to be accurate in 95% of his guesses.⁴⁵⁴

Dunninger's reminiscences about the "Battle of the Rhine" suggest that he regarded Rhine as a show business rival. The mind reader observed of Houdini, "Always Houdini was a challenger; to prove that he was right, he had to prove that someone else was wrong. He became great when he made a rival look small...By getting rid of the tough adversaries, he cleared the field for a new crop

⁴⁵³ Joseph Dunninger, Inside the Medium's Cabinet (New York: David Kemp & Co., 1935), 141.

⁴⁵⁴ Joseph Dunninger, What's On Your Mind? (Cleveland: World Publishing Company, 1944), 134-5.

of softies that he could mow down as fast as they sprouted up."⁴⁵⁵ Dunninger's observations on how Houdini dealt with competitors also apply to Dunninger's handling of the Duke work. Dunninger insisted that the Duke laboratory had often requested his presence, but Dunninger had never complied, noting harshly, "I declined, rather than be identified with the residue of crackpots and publicity seekers who put in an appearance there. I say 'residue' with emphasis, because nobody—and I mean nobody!—who had real telepathic ability would have reduced themselves to the kindergarten stage of experimentation then underway at Duke." In a critique reminiscent of Willoughby's, who described confusion in his psychology lab regarding the Zener card symbols, Dunninger blamed the Duke E.S.P. cards primarily for inducing boredom. He insisted he would have submitted to tests if normal decks of cards were used. Familiarity guaranteed better results in transmitting information, telepathic or otherwise. Speaking like a true magician he remarked, "playing cards, with people who know and like them, are a language in themselves."⁴⁵⁶

The fact that Dunninger regarded Rhine as a lowly rival also suggests a popular culture that could prefer marvels and exotics to worldview-bending new realities. In the 1890s, when radio was still a fanciful and not-yet-realized technology, interest in telepathy had deepened—anecdotal evidence, at least,

⁴⁵⁵ Dunninger, as told to Walter Gibson, Dunninger's Secrets (Secaucus, New Jersey: Lyle Stuart Inc., 1974), 243.

⁴⁵⁶ Dunninger, Dunninger's Secrets, 64-6.

made it more of an authentic phenomenon than the projected wireless-telegraph or radio. Through the early twentieth century, telepathy remained a promising power. Writers such as Mark Twain, Frank Norris, and Upton Sinclair could promote it in novels and essays; science fiction writers such as H.G. Wells and Edgar Rice Burroughs could promote it in intergalactic settings, and technically-minded writers could argue telepathy's likelihood by analogy to the workings of the telephone exchange, radio broadcast, and the human nervous system. In his work, Rhine sought to investigate scientifically telepathy and the paranormal; yet, at least in the public view, he succeeded more in bringing the performance pieces of telepathy and clairvoyance into the laboratory and public arena. As the technology for radio became normalized, as the Zenith broadcasts presented Rhine's work as entertainment, and entertainers like Dunninger offered radio broadcasts of mind-reading as a product for public consumption, the desire for the exotic overtook any widespread hope for scientific proof of occult phenomena. Consumer culture encouraged that products be exotic and alluring, and telepathy served better as an entertainment product than as fact. The Zenith radio query "What-Is-It?" seemed half-hearted, encouraging instead an underlying sentiment of "gee-whiz."

Rhine, in his work, attempted to mount an "honest" wonder show—one that would establish that the soul should not be overlooked as a genuine category for scientific concern—that the "psyche" should not be removed from

psychology; however, the public saw only the gee-whiz potential of his ideas. At the onset of the Great Depression, when both Rhine and Dunninger became prominent, "national past-times" such as mind-reading experiments, provided welcome relief from grim reality.

PART THREE: MILLENNIAL WONDERS

Chapter Six: The Missionaries

While the 1930s intellectual pledged his or her allegiance to gritty documentaries and proletarian novels, the general public tended to prefer exotic escapes and romances. Movie patrons feasted on fantasies that included musicals with Ginger Rogers and Fred Astaire, the aquatic epics of Esther Williams, jungle or space adventures with Tarzan and Flash Gordon, and at least one journey to the spiritual utopia of Shangri-La. This desire for the exotic was explored in Charles G. Finney's 1935 underground classic, The Circus of Dr. Lao, a novel which depicted the combination of boredom, hopelessness and sexual longing with which small-town America could greet the appearance of a mysterious circus in the 1930s. Many historians have argued that such a longing for the exotic was a natural outgrowth of consumerism: a consumer society relied on the advertising industry's ability to impart a free-floating desire to encourage spending.⁴⁵⁷ Such conditions made the 1930s ideal for wonder shows—for performances that could

⁴⁵⁷ See especially Warren Susman, Culture as History: The Transformation of American Society in the Twentieth Century (New York: Pantheon: 1984); and William Leach, Land of Desire (New York: Pantheon, 1993). Leach's history of the department store noted the advertising industry's effort to evoke in consumers a longing for the exotic and new, and its goal of conditioning consumers to enter a state of free-floating desire.

instill hope that America would ultimately escape its economic horrors.

Accordingly, numerous doctors, generally in lab coats, appeared with the sugar-coated pill that combined science with progress and a touch of mystery.

One of the great incubators for such cures was the Century of Progress Exposition in Chicago from 1933 through 1934. The relationship between science and industry was the keynote of the Century of Progress, and after one season a newspaper pronounced the entertaining displays designed by scientists in the Hall of Science “a whoopee success—a slangy expression which would have shocked the men of science a few years ago, but which goes today.”⁴⁵⁸ Corporate exhibitors at the fair courted the public at least as strenuously as the scientists did with their “whoopee success”; General Electric dramatized its research laboratory with thirty-minute performances in its “House of Magic.” Westinghouse and General Motors presented similar technological marvels in their exposition areas. After the fair closed, both General Electric and General Motors decided to tour with their entertaining science shows. In 1936, General Motors launched its “science circus” to bring science wonders to small towns throughout the United States. Historian Roland Marchand has argued that the lecturers in these “magic-

⁴⁵⁸ “Hall of Science Is Big Surprise of World’s Fair,” *Chicago News*, 18 October, 1933. Clipping in Century of Progress collection, Special Collections, University of Illinois, Chicago. Folder 14-332.

science" shows were missionaries for industry, promising consumers that corporate America was synonymous with progress.⁴⁵⁹

At the same time that the General Motors Parade of Progress caravan was touring America, a west coast evangelical preacher named Irwin Moon offered his own scientific wonder show. His debut at the Golden Gate Exposition of 1939-1940 in San Francisco gained him the sponsorship of the Moody Bible Institute. This preacher relied on scientific demonstrations as a source for new parables to convert the youthful and the jaded to fundamentalist Christianity. The wonders of nature and science, in Moon's demonstrations, only highlighted the greater wonders of God's creation. Moon's show not only had similarities to those of the large corporations of the 1930s, but also historical similarities to such early wonder shows as that of the nineteenth-century electrical healer Charles Came. Both, for example, led audiences from views of the cosmic—the starry heavens—to the microcosmic—magic lantern slides and microscopic views of paramecia and other single-celled animals. Both sought to assure the public not to fear technology and modernization, whether the early telegraph or the most-sophisticated eavesdropping microphones. In ninety years, the basic recipe for the wonder show had undergone little change, suggesting a naïve public long-separated from the technical elite.

⁴⁵⁹ See Roland Marchand, *Creating the Corporate Soul* (Berkeley: University of California Press, 1998), especially chapter seven, "The Corporations Come to the Fair," 249-311.

In their wonder shows both the industrial corporations and Moon were engaging in image-making and sales. The corporate-financed shows assured the Depression public of an inevitable return to prosperity to encourage spending; Moon, however, was fishing not for the public's pocket book, but for its soul. He documented his success with the number of pledges to Christianity that audience members signed; even more ambitious, perhaps, were Moon's efforts to remake the image of fundamentalist Christianity and so harmonize it with notions of progress.

Professor Frost's Remarkable Astraphone

The corporate science shows offered at the Century of Progress were largely a product of public relations departments. To counter public perceptions that corporations were ungainly, inhuman bureaucracies interested only in profits, corporate public relations departments began to promote the corporate research laboratory as a romantic terrain in which white-coated technicians were new pioneers, conquering new lands.⁴⁶⁰ Since the turn of the century the use of the term "wizard" for a scientist or inventor had been a commonplace, but it took the advent of mass advertising to make this one of the chief metaphors for explaining

⁴⁶⁰ See Roland Marchand and Michael L. Smith, "Corporate Science on Display." In Ronald G. Walters, editor, Scientific Authority and Twentieth Century America (Baltimore: Johns Hopkins Press, 1997).

the work of corporate research laboratories. When General Electric faced ongoing litigation for anti-trust violations in the 1920s, for example, its public relations department pushed forward engineer Charles Steinmetz of General Electric as a culture hero, in the role of wizard.

When John Dos Passos insisted in his novel USA that General Electric had made its colorful head engineer Steinmetz into a "parlor magician," the novelist was condemning the public relations imagery that successfully sugar-coated capitalism. The ongoing anti-trust actions brought against General Electric encouraged the company's public relations department to find other "human interest" stories in the ranks of their scientists after Steinmetz's death in 1926. This strategy would become more crucial in the 1930s, when the goal of corporations was to assure consumers that with its close links to science, big business could perform miracles.

As part of this effort, in 1929, GE hired the dashing war correspondent Floyd Gibbons to provide colorful ten-minute talks about developments at GE's Schenectady research laboratory for the General Electric Hour's symphonic broadcasts. The dashing Gibbons, who wore an eye patch as a result of wounds suffered while covering World War One, easily shifted from newspapers to radio work. Gibbons coined the term "House of Magic" to describe GE's Schenectady laboratory, and commented that the GE engineers' efforts represented "the weirdest hocus-pocus I ever heard. The trouble with all these unsung wizards of

the research laboratory is that a cloak of modesty screens their great accomplishments from the public they serve.’⁴⁶¹ Though originally opposed by GE’s research engineers, Gibbon’s phrase, “House of Magic,” stuck. For the 1933 world’s fair, GE's exhibit contained an Art Deco theater called the “House of Magic;” inside the theater, every thirty minutes, a former magician demonstrated research products. With this move, the corporation officially went into the wonder show business. This maneuver also suggests the larger goals of this world's fair.

The Century of Progress Exposition was shaped around the theme of science’s contribution to industry. This theme also gave big business the opportunity to argue that hand in hand with science it could lead America out of the Depression. Early in the fair’s planning stages, its management had reached out to the scientific community for support and aid in shaping exhibits. According to legend, the fair’s organizer, Rufus C. Dawes, during a dinner in 1928 had commented to Columbia University physicist Michael I. Pupin, “don’t you think it might be interesting to explain to the American people how deeply commerce is indebted to basic science.” Pupin, apparently, thought it over and the next day agreed. He suggested that the National Academy of Sciences, through its National Research Council, could set up a Science Advisory Committee. Formed during World War One to bring scientific aid to the war effort, the National Research

⁴⁶¹ Marchand and Smith, 161. Quote from Edward Gibbons, Floyd Gibbons, Your Headline

Council (NRC) continued on as an organization that brought together academic scientists, engineers, and industrial researchers.⁴⁶² Its members were eager for public awareness of scientific contributions to the good life.

Contrary to arguments that science popularization in this era was strictly the work of corporate public relations departments, the planning of the Century of Progress reveals how dedicated the Science Advisory Committee (SAC) was to employing scientific showmanship to intrigue the public.⁴⁶³ In 1929, the SAC's director, Maurice Holland—also the director of the Division of Engineering and Industrial Research at the NRC—wrote to Frank Jewett, the group's chairman, describing his encounter with a Cornell physics professor who specialized in optics, F.K. Richtmyer. Asked to join the SAC, Richtmyer had responded by asking Holland why scientists should get involved. Richtmyer pointed out that world's fair crowds were more interested in the distractions of the midway than science, and argued that the temporary nature of an exposition made the investment of time dubious. Holland responded that scientific involvement in the exposition could aid the cause of funding for scientists. It was "a unique opportunity to bring to the industrialists a physical demonstration of the

Hunter (New York: Exposition Press, 1953), 218-19.

⁴⁶² John E. Findling, Chicago's Great World's Fairs (Manchester, UK and New York: Manchester University Press, 1994), 92-3.

⁴⁶³ The SAC's ability to gain the cooperation of the nation's top scientists and prompt their eager participation in radio talks and in fair exhibit design puts into question John C. Burnham's contention that "Scientists who believed in science as a calling rather than an occupation tended increasingly to withdraw from popularizing during the twentieth century, leaving the field to media personnel and educators." See Burnham, 7.

importance and influence and contribution of science to development,” and he predicted that “following the exposition there would be a considerable increase in scientific activity in industry.” Holland added, “It might influence a number of potential ‘angels’ to direct their endowments to scientific enterprises.”⁴⁶⁴

Richtmyer was convinced. Soon numerous other Science Advisory Committee scientists eagerly joined in planning the exposition.

Early on, the SAC formed a strategy that would involve popularizing science without making it "cheap and sensational." They wished to balance instruction with entertainment, and to maintain dignity "without being dull."⁴⁶⁵ Yet Holland was certain that to interest the public, scientists would have to leave their elitist notions behind and become showmen. His unpublished article “Science Takes off the High Hat” stressed the notion that scientists needed to become flashier to advance their cause and insisted that the world’s fair would be their forum to do so. At the fair, “Tom, Dick and Harry and his brother and sister will be able to actually meet Science.” But showmanship in science need not mean they were “resorting to sensational methods lacking dignity...”⁴⁶⁶ Holland’s article laid out the central strategy that all successful exhibitors eventually were to employ at the fair. Scientists did not deserve the common man’s attention if they

⁴⁶⁴ Holland to Jewett, 27 July, 1929. Century of Progress collection, University of Illinois. Folder 5-245.

⁴⁶⁵ Pamphlet. National Research Council Science Advisory Committee. 1 October, 1929. Century of Progress collection, University of Illinois, Chicago. Folder 5-266.

⁴⁶⁶ Maurice Holland, “Science Takes off the High Hat.” [unpublished manuscript.] Century of Progress collection, University of Illinois, Chicago. Folder 5-248.

did not learn his language and needs. The answer, similar to the strategy Holland had used for encouraging Richtmyer, was to pierce the public's "armor plate of self interest" by finding the vulnerable "pocket nerve," which encouraged one to think of one's wallet. Scientists needed to establish that science was well worth its cost, as it improved the life and comfort of the average citizen. The world's fair scientists could do so with showmanship. Movement and color were the keys to gaining the public's attention. It was movement and color that brought crowds to automobile showroom windows on Broadway, and would do so as well at the exposition in Chicago. If necessary, they would use "living actors, moving models, talking pictures, and spectacular displays of every sort."⁴⁶⁷

The National Research Council surprised the fair management when it hired its own public relations company several years prior to the fair's opening to begin publicizing its work at the upcoming fair. Numerous press releases were distributed nationwide to publicize lectures, new discoveries, and developments in the industrial and agricultural applications of science. Many of these press releases included what historian John Burnham has called a "gee whiz" quotient. For example, one described the wonders of ultraviolet light in which "false teeth appear black, natural ones a brilliant blue white"; another described a "gate of

⁴⁶⁷ Press release, National Research Council, n.d. "Can 100,000,000 People Be Interested in the Life History of Science?" Century of Progress collection, Special Collections, University of Illinois, Chicago.

ice” to appear at a refrigeration exhibit.⁴⁶⁸ The Council also arranged radio talks for its scientists that were broadcast on NBC affiliates in 1930 and 1931. These broadcasts dealt with topics such as railroad technology, anthropology, aviation, agriculture, microbes, physics, math, and paleontology. Richtmyer, the originally reluctant professor of physics from Columbia University, gave a radio talk on “How Light Puts Electrons to Work,” which explained how the photo-electric effect allowed light to dislodge electrons and complete electrical circuits. His clear explanation of the technical issues also included "gee whiz" touches. For example, he mentioned that when visitors came to the photo-electric cell exhibit at Chicago they “will very likely be greeted by a mechanical parrot.”⁴⁶⁹ The “electric eye,” then a novelty, did indeed become one of the marvels of the fair.

In these broadcasts, the scientists often tied their discussions to the upcoming exposition. When the Century of Progress management complained that these talks could encroach on their own publicity efforts and promise wonders that would not eventually appear, Holland did not demur. He reminded the officials that the broadcasts had been approved, seldom mentioned specifics about the fair, and helped “to build the national reputation of the chairmen of the Science Advisory Council who are responsible for the philosophy of the science

⁴⁶⁸National Research Council press releases, 5 October, 1930; 15 March 1931; Century of Progress collection, University of Illinois, Chicago. Folders 5-267; 5-268.

⁴⁶⁹F.K. Richtmyer, “How Light Puts Electrons to Work.” Press release announcing radio show, 25 February, 1931. 5-268.

exhibits.”⁴⁷⁰ Not one to easily back down, Holland added that the broadcasts, which required no expenses except for the travel costs for the scientists, would reach ten million people and stimulate interest in the upcoming exposition.

If the World’s Columbian Exposition in Chicago had established the power and beauty of electricity properly managed, the Century of Progress in Chicago looked beyond the earth to cosmic ratification of its displays of industrial might. President Grover Cleveland launched the 1893 fair by tapping a gold telegraph key. The 1933 fair echoed and expanded that opening. The star Arcturus is forty light years from the Earth; hence, light that Arcturus had emitted in 1893, during the World Columbian Exposition, would just be arriving on earth in 1933 for the Century of Progress. Chicago organizers decided to open the 1933 fair by capturing a beam of light from Arcturus at an observatory, transforming it into electricity with a photoelectric cell, amplifying it, then relaying it to the Chicago fairgrounds along Lake Michigan.

The opening ceremony, held May 28, 1933, proved quite popular. Dignitaries in charge telephoned four separate observatories, and at a signal, each observatory relayed the "Arcturan electricity" towards the fairgrounds. This was demonstrated on a large illuminated map of the country; bright red streaks of light streamed from the observatories' locales and converged on Chicago. This signal then triggered a spotlight from the roof of the Hall of Science that shone on each

⁴⁷⁰ Maurice Holland to Miss Martha McGrew, 3 October, 1930. C.O.P. collection, University of

of the fairground's dark buildings, which then burst into light one by one. Reflecting on this elaborate procedure to transmute star light into fairground illumination, Will Rogers pointed to the great distances that existed between scientists and laymen, with his comment, "Course it may all be just a gag, but it's a good one, anyhow. These scientists I expect have more fun out of us than we do out of them. Neither really knows when the other is kidding."⁴⁷¹ The gag was so good that the fair management, responding to public favor, continued the Arcturus lighting ceremony every night for the two-year run of the fair.

Scientists involved in the fair sought valiantly to dispel Will Rogers's sense that scientists and laymen belonged to two separate cultures. Edwin B. Frost, Director of the Yerkes Observatory and one of the heroes of this opening ceremony, became overcome with ideas to dramatize the fair's relationship to the stars. He proposed to the fair management that he might create an "astraphone"—an organ that would play the music of the stars. The instrument would require that telescopes be trained on major stars, each of which would be keyed to a musical note and so play a "well-known hymn" for the crowds. Frost suggested using stars prominent in the summer sky such as "Vega for high soprano, Arcturus for

Illinois, Chicago.

⁴⁷¹ Will Rogers, "Chicago's Great Will Rogers' Advice, Herald and Examiner, 28 May, 1933, n.p. Century of Progress Collection, folder 14-286.

baritone, Antares for Basso Profondo; then by various arrangements, we could let the stars sing together.”⁴⁷²

The symbolic value of this opening was not only to remind Chicagoans and the world of the past glory of the World’s Columbian Exposition, which might as well have been forty light years distant, but to show the new and surer reach of humanity in the 1930s. As one guidebook argued, “Science, patient and painstaking, digs into the ground, reaches up to the stars, takes from the water and the air, and industry accepts its findings...”⁴⁷³ A less-flattering formulation of this process is found in the fair’s official motto: “Science Finds—Industry Applies—Man Conforms.”⁴⁷⁴ This somewhat foreboding motto encapsulated the fair theme of science serving humanity, particularly through the industries. Key to the development of this theme was the need to present not only the displays of large corporations or “applied science” but separate displays of “pure science.”

The fair’s Science Advisory Committee (SAC), which included physicist Michael Pupin, originally urged the management to create at the fair’s center a “Temple of Science” that would reflect “scientific idealism” and offer thoughtful visitors a quiet schooling in both the principles of science and its importance to “modern life.”⁴⁷⁵ The SAC also recommended that the Temple of Science include

⁴⁷² H.D. Sanborn to C.W. Farrer et al. 16 November, 1934. C.O.P. collection, University of Illinois, Chicago. 1-6177.

⁴⁷³ Official Story and Encyclopedia of A Century of Progress (Chicago, A Century of Progress Administration Building, 1933), 11.

⁴⁷⁴ Ibid.

⁴⁷⁵ Findling, 93.

a central rotunda “the approaches to which might contain an allegorical representation of the transition from ignorance, superstition and tradition....to present day conditions when the spirit of science permeates every phase of life.”⁴⁷⁶ The Temple of Science was eventually scaled back and renamed the Hall of Science. But it still retained a central position in the fairgrounds. Large allegorical friezes of mythic figures depicting such concepts as “Energy” and “Light” adorned the building, and a large sculpture of a heroic figure slaying a serpent—“Man Combating Ignorance”—was stationed outside the Hall’s main approach. If Edison’s float “Elektra” for the Columbus Day parade of 1892 showed angels harnessing the power of dragons, the exhibitors of the 1930s wished to show a complete triumph over —no longer a partnership with—the earth’s forces and the older sources of wisdom.

Following Holland’s dictums, the Hall of Science displays sought to be lively. Static displays were avoided; instead, a variety of media depicted processes and movement. Likewise, fundamental scientific principles, whenever possible, would be both explained and then linked to a “result well known to the public.” For example, an exhibit outlining the chemical process of catalysis could include Crisco as one of its products.⁴⁷⁷ All was motion. In the physics section, a massive cup-shaped black billiard table with a central rotor set in motion two

⁴⁷⁶ “Preliminary Report of the Science Advisory Committee to Chicago Trustees.” 25 March, 1930. Century of Progress collection, Special Collections, University of Illinois, Chicago. Folder 5-247.

hundred white billiard balls; depending on the rotor's speed the balls gathered in the center or bombarded off each other and the edges, suggesting the process of condensation and evaporation of water molecules. The physics exhibit included a revolving platform, kicked into motion like a potter's wheel. On it stood an athlete with dumbbells; as he extended his arms the rotation slowed and as he brought them towards his body, the rotation speeded revealing the laws of momentum. Watching the athlete repeat these motions and shifting speeds created a "weird" spectacle, according to one reporter.

Exhibits also featured robots. A 'transparent man' nicknamed Oscar made of plastic offered an anatomy lesson in the medical section. Dr. William Mayo pronounced Oscar, the transparent man, to be "a perfect specimen of manhood." Oscar became a popular focus for spectators and writers, prompting such witticisms as "aren't all men easy to see-through?" or empathetic pronouncements about his lack of a "private life."⁴⁷⁸ Another medical exhibit featured an eight-foot talking tooth that lectured about the process of tooth decay. In the chemistry section, a 1,500-pound robot "with the serious, intellectual face of a scientist" and moving lips both lectured about food chemistry and revealed a projection screen

⁴⁷⁷ R.P. Shaw to L.R. Lohr. 21 December, 1929. Century of Progress collection, Special Collections, University of Illinois, Chicago Folder 5-246.

⁴⁷⁸ World's Fair Weekly, 7 October, 1933, p. 22. Folder 16-153.

in its torso which offered images of the digestive process to complement the robot's speech.⁴⁷⁹

Just as Charles Came's magic lantern displays of microscopic life had helped establish a mood of wonder in the 1840s, the microscopic level of existence also was featured in the 1933 fair. The biology display included the crowd favorite of the "micro-vivarians," which presented six screens that revealed magnified microscopic animals. Spectators saw "these monsters of a minute world dart about, forage for food, fight, reproduce."⁴⁸⁰ This Darwinian display of realism, at least one step removed from the human struggle for survival during the Depression, appealed to the crowds. Georg Rommert of Munich tended to the microscopes and the hydras, amoebas, paramecia and other microscopic creatures that he carefully had cultivated from specimens of pond water, ditch water and moss scum. Journalists assured readers that the display did not involve the use of mere motion pictures, but "the best projections of living micro-organisms ever displayed."⁴⁸¹ Rommert, whom journalists alternately called a magician and a showman, explained how he lectured all afternoon, would then rush home to get more specimens, and return to lecture in the evenings. "Each of these creatures has a different diet. Each prefers a different temperature. I must keep them hungry, so they will perform for the crowd. But they must not get too hungry, or

⁴⁷⁹ "Robot Lectures Like Gentleman; Insides Exposed," Chicago Tribune, 31 May, 1933. Folder 14-287.

⁴⁸⁰ Hall of Science description in Edwin Teale, "History's Biggest Show," Popular Science Monthly. July, 1933, 23-27; 91.

they will be too weak to make a good demonstration.”⁴⁸² Reflecting the Darwinian world of exhibiting, Rommert was a success, called back for the 1934 season and given a larger exhibit area with better seating for the crowds.

In these and other Hall of Science exhibits, the SAC’s strategies paid off. Articles that evaluated the first year of the exhibit noted that the Hall of Science had been a popular destination. Furthermore, despite predictions to the contrary, “most visitors took the science exhibits seriously last year, and more pencils and notebooks were seen in the great hall than in any other part of the fair.”⁴⁸³ If such reactions are to be believed, the SAC succeeded in reaching both fairgoers with short attention spans and those with genuine interests in learning. Such a conclusion supported the views of Northwestern University physics professor Henry Crew when he wrote for the inaugural issue of the World’s Fair Weekly that young people of the 1930s were less likely to be in awe of science or to regard it in terms of “miracles” or “mysteries.” The professor argued that in the process of building their own radio sets, “boys” had to learn so “much about electron theories, electromagnetic waves, and similar ‘advanced’ topics that the old hard scientific ice was broken once and for all.” Of the exhibits, Crew promised, “You look, and you listen, and right away the whole thing is as

⁴⁸¹ “Life Under the Microscope,” World’s Fair Weekly, 22 July, 1933, 35. Folder 16-142.

⁴⁸² Ibid.

⁴⁸³ “Hall of Science Is Revamped for this Year’s Fair,” Chicago Tribune, 31 March, 1934. Folder 14-248.

apparent to you as a card trick that has just been exposed by the performer.”⁴⁸⁴

But Crew’s optimism and year-end celebrations of the science exhibits contrasted with another article that described changes in the Hall of Science for 1934. The author remarked that exhibits had been revamped to fit what appear to be Holland’s basic rules: “1. Is it simple? 2. Can it be tied up with some common experience of the average visitor? 3. Does it move?”⁴⁸⁵ The biggest disappointment were the mathematical exhibits, which attracted few visitors. Henry Ford, apparently, offered to help expand these “to show how they affect industry and the man in the street.”⁴⁸⁶

Other end-of-year-one evaluations of the fair looked less favorably on the science emphasis of the fair. A letter to the editor from early January 1934 argued that the celebration of science at the Century of Progress had gone too far. Titled “Science Bankrupt” and signed “An American Citizen,” the letter began by describing Oscar, the transparent man. The writer noted it took three years to build Oscar, and that he was a “wonderful piece of workmanship,” but then added, “and yet he is not perfect...he cannot think, he cannot speak, he cannot walk, has no life and is not able to judge right from wrong. Now, if God had created him, he could do all these things.”⁴⁸⁷ The writer praised University of

⁴⁸⁴ Henry Crew, “The Human View of Science,” World’s Fair Weekly, 13 May, 1933, pp. 6-7. Folder 16-132.

⁴⁸⁵ Joseph Ator, “Hall of Science Coming Out in New 1934 Model,” Chicago Tribune, 23 May, 1934. n.p. Clipping. Folder 14-248.

⁴⁸⁶ Ibid.

⁴⁸⁷ “Science Bankrupt,” Chicago News, 2 January, 1934. n.p. Folder 14-339.

Chicago President Robert Hutchins's campaign to champion the humanities over the soullessness of science. He quoted Hutchins as saying "Science is bankrupt." The emergence of Hutchins and other New Humanists in the 1930s suggests that the Great Depression was a time when "progress" could be questioned as well as automatically linked to science and business. This letter writer raised the seemingly timeless issue of whether humanity's ethics could keep up with the impact of developing technology. Perhaps with fairgoers such as "An American Citizen" in mind, fair organizers also had wisely named the SAC's proposed "Temple of Science" as the "Hall of Science." Undoubtedly, the fair management would have steered this malcontent away from Oscar to the Hall of Religion, which also had done remarkable trade, with 10,000 visitors daily. The management had originally questioned that anyone would bother with the Hall of Religion except "the remnant of the late Victorian era."⁴⁸⁸ But the hall's inclusive policy, lessons of tolerance, and staging of events such as a pageant that celebrated Chicago's large Jewish population, helped make it a popular destination.

Even though Franklin Roosevelt urged the fair management to continue the exposition for an unplanned second season and gained congressional appropriations for federally-sponsored exhibits, big business used the 1934 season's inauguration to convince the public that business and science allied

⁴⁸⁸ "10,000 Visitors Daily at Fair's Hall of Religion," Chicago Tribune, 16 July, 1933. Folder 14-

could solve the country's woes without any federal help. General Motor's President Alfred P. Sloan held a forum of businessmen and academics to support this position before the second year's opening. The major theme was that prosperity would inevitably return without any need for heroic experiments in government like the excesses of the New Deal. Sloan sounded a note common among General Motors officials when he accused many of believing that the "world is finished in its building; [and] that there are no worthwhile possibilities ahead."⁴⁸⁹ Instead the world must be regarded as a dynamic system dependent on technological innovation, and, presumably, purchasing guarantees such as built-in obsolescence for industrial products. Sloan insisted that "New Deal attempts to regiment the nation and reduce its affairs to a static condition are the one sure way of preventing the scientists...from accomplishing advance."⁴⁹⁰

Other speakers complained of strikes and linked them to the New Deal. Arguing against the anti-technology bias of New Humanists and others, Glenn Frank, president of the University of Wisconsin, insisted that "the machine has not betrayed us, we have betrayed the machine. Science and technology have given us the means by which we may emancipate the race from poverty, drudgery, and insecurity." Frank added, "[let us not] be a people strangled by our

307.

⁴⁸⁹ Alfred P. Sloan, Foreword to "Previews of Industrial Progress in the Next Century." Folder 1-6211.

⁴⁹⁰ "Science Forum Paints Future a Blaze of Hope," Chicago Tribune, 36 May, 1934. C.O.P. collection, University of Illinois.

own success.”⁴⁹¹ Rather than call a halt to scientific research and technological advances “until they no longer put so many strains on the traditional structure and functions of our social order,” Frank urged a partnership between the hard sciences and social sciences so that “adjustments” could be made in advance to avoid the “social and economic havoc”—such as job lay-offs—that innovations could otherwise bring.⁴⁹²

During the winter break and beginning of the 1934 season, many corporate exhibitors redesigned their displays to bring them closer into accord with the appropriate philosophy of showmanship. Exhibitors who had assumed visitors would contentedly stand and read static explanations shifted tactics in the fair’s second season. Business writers approached the fair as a grand experiment in social science and salesmanship and wrote with approval of these adjustments. One article showed a crowded midway and asked, “What exhibits stop this moving throng and why?” The writers announced that at the fair Mr. Average Citizen was “King” because he voted with his feet and avoided exhibits that lacked movement or human interest.⁴⁹³ The article revealed that Mr. Average Citizen responded to gimmicks like electric eyes, showmanship, movement, and pretty women. Robots could draw a crowd but thrilling spectacles did better.

⁴⁹¹ Ibid.

⁴⁹² For a further look at the debate about the impact of technology on labor in the 1930s, see Amy Sue Bix, *Inventing Ourselves Out of Jobs* (Baltimore: The Johns Hopkins University Press, 2000).

⁴⁹³ J. Parker Van Zandt and L. Rohe Walter, “King Customer at a Century of Progress,” *Review of Reviews*, September, 1934, 22.

Marionette shows which featured new products in a dramatic framework also became common.

Exhibitors dramatically changed their display strategies to accommodate the masses. Chrysler originally installed an outdoor track for demonstration rides, but in 1934 it added hourly stock car races by Barney Oldfield and other drivers who would “race around hair pin turns while tires smoke and brakes squeal.”⁴⁹⁴ Standard Oil began with a movie that discussed the contributions of oil to industry but in 1934 added an outdoor wild animal act that included “Allen King and his den of ferocious tigers and lions.”⁴⁹⁵ The authors argued that the wild animals did an excellent job of conveying Standard’s motto of “Live Power.” The Safety Glass trade group invited passersby to throw baseballs at windows. There was a limit to the value of automatic exhibits. The authors noted that “Sunbeam’s potato peeling Mixmaster exhibit has three pretty girls on individual stages that are worth a dozen robots.”⁴⁹⁶ Overt salesmanship also vanished. Whereas the General Motors exhibit included salesmen who sold about 3,000 automobiles, the Ford exhibit which opened in 1934 became the fair’s most popular and lavish. The article praised Ford’s strategy, noting that at the pavilion “There is not even ‘low-

⁴⁹⁴ Ibid., 23.

⁴⁹⁵ Ibid., 24.

⁴⁹⁶ Ibid., 26.

pressure' selling...[but] Let none mistake. Ford's gigantic gesture is magnificent merchandising."⁴⁹⁷

Exhibitors were in a Darwinian struggle for the crowd's attention with the midway's bawdier attractions. The Streets of Paris provided sidewalk cafes and smutty postcards; peepshows could reveal naked or barely-clad venuses on clamshells; Sally Rand—and her imitators—wore only white body powder for fan dances, and at a freak show the “largest collection of strange and curious people ever assembled” could be seen for 25 cents.⁴⁹⁸

The fair's moral, for salesmanship, was clear. These business writers concluded that “no one ever lost money under-estimating the intelligence of the American public.”⁴⁹⁹ Marketers needed to conform to “King Customer's” low tastes and push drama over logic; this diminution made of the public a cruel tyrant, yet one curiously worthy of respect. Savvy marketers were having to “recognize the Customer as King and are learning to serve him in the ways he wants to be served.”⁵⁰⁰

⁴⁹⁷ Ibid., 27.

⁴⁹⁸From advertisement, Official Guidebook of the Fair (Chicago: Century of Progress Administration Building, 1933), 158.

Conjuring in the House of Magic

Corporate research laboratories, in particular, assumed that the Customer was King and offered miracles and wonders rather than dull scientific explanations. Miraculous science was on display at Westinghouse, General Electric, Bell Telephone, and American Telephone and Telegraph. Many of these research laboratory shows were given dramatic names. Westinghouse presented its research developments in a "Hall of Miracles," General Electric stuck with its "House of Magic," and General Motors eventually created a "Room of Mystery."

An advertisement for Westinghouse urged the public not to leave without seeing the "latest developments in electrical science direct from the famous Westinghouse Research Laboratory on 'Miracle Hill' in East Pittsburgh." The advertisement promised the public a look at "black light," air-conditioning, and an automatic steel rolling mill. It also promised to reveal developments in one of Tesla's pet fields, often derided by Steinmetz, "the transmission of power by radio."⁵⁰¹ The Westinghouse display featured a cobalt magnet that defied gravity as it hovered above an electromagnet, and demonstrations of radio beams deflected with mirrors. The Hall of Miracles also featured a bank teller window with a \$20 bill resting on it. Visitors were invited to grab it, only to find that a photoelectric eye caused a gate to descend before they could reach the bill. An x-

⁴⁹⁹ Van Zandt, 24.

⁵⁰⁰ Van Zandt., 27.

ray apparatus also allowed visitors to see the bones in their hands. And a magnetic strain gauge sensitive to one millionth of an inch showed how a railroad track bent under the weight of a visitor.

In an allied effort, in the air-conditioned puppet theater at the Electricity Building, the Electric Light and Power Industry produced the musical comedy "What A Night." In the play, a husband, Henry Pettigrew, after losing money in bridge, complains bitterly about an electric bill at home. His wife Penelope defends her labor-saving devices and feeds Henry a welsh rarebit. After dinner Henry pulls the electric meter off the wall. His dreams become troubled—as dancing lightbulbs, a talking vacuum cleaner, electric iron, refrigerator, radio, and other appliances reproach him and insist that they are a great help to his wife. In the morning, he repents.⁵⁰²

General Electric, which had been hyping its House of Magic since 1929, was in the vanguard of such exhibitors. Its theater, topped with a snack bar, had an electric sign, "House of Magic," that shone forth beneath the interior columns of the electricity building. These columns told the "story of the electrical industry"; each was inscribed with words and images such as "Laboratory," "Factory," "Foundry," "Power," "Light," "Transportation," and so on. Inside, the GE theater was more modest and seated an audience of about one hundred. On the

⁵⁰¹ Official Guidebook of the Fair (Chicago: Century of Progress Administration Building, 1933), 148.

⁵⁰² "What a Night." Pasadena Puppeteers. (Program.) Box 16, folder 264. C.O.P. collection, University of Illinois.

stage was a mixture of electrical machinery and standard magician's stage props. Every thirty minutes, a staff of young engineers gave performances; chief among the engineers was a genuine stage magician, William A. Gluesing. Each thirty-minute show at the House of Magic would include six or more acts that featured high-frequency coils, oscilloscopes, and stroboscopes.⁵⁰³ General Electric also gave special hour-long performances to more technically astute audiences—for example, to a group of visiting transportation engineers in town for a conference or a group of visiting engineering students. These performances were “considerably more technical than the usual show...to give the university students a little something more.”⁵⁰⁴

A pre-fair press release for 1933 stated that magician Gluesing would demonstrate such devices as a sodium lamp, the “thyatron organ” which produced sounds from a series of radio tubes, and the “fever machine” which employed high frequency electricity for “increasing temperature at will in fighting disease.”⁵⁰⁵ During performances, Gluesing announced that “the pure science of yesterday is the applied science of today, and the pure science of today will be the applied science of tomorrow.”⁵⁰⁶ For one act, Gluesing held a slender glass tube filled with helium glowing with a lavender colored light. He then would tilt the

⁵⁰³ Roland Marchand and Michael L. Smith, "Corporate Science on Display," 162.

⁵⁰⁴ G.E. Simons to E. Ross Bartley. 14 October 1933. Folder 1-6177. C.O.P. collection, University of Illinois.

⁵⁰⁵ “Wonders of Modern Electrical Science.” Century of Progress press release. 24 October, 1932. Folder 1-6181. C.O.P. collection, University of Illinois.

tube, grasp its center, which would promptly turn black, and then continue to pass his hand down the tube, “squeezing the light out of it.” Afterwards he would explain that a nearby “coil of copper, heated by the electric current has been broadcasting electrons. You didn’t know it until you saw the effect of the electrons lighting helium gas. I passed my hand down the tube to show you how, when the bombardment of electrons is cut off, the light goes out.”⁵⁰⁷

A G.E. publicity photograph of Gluesing shows him looking somewhat subdued in a pin-striped suit as he holds a star-topped “magic wand.” The electrical current of the human body, in this case the magician’s, was sufficient to light this “Thyratron” electron tube. Journalists appreciated the showmanship. In the illustrated column “Strange As It Seems,” cartoonist John Hix featured Gluesing operating apparatus with which: “Popcorn can be popped between 2 containers of ice...without the application of heat.”⁵⁰⁸ And the authors of “King Customer at a Century of Progress” wrote approvingly of G.E.’s “scientific vaudeville.”

The marvels continued in 1934. Referring to scenes in western serials in which the heavies shoot out the lights in saloons, a press release announced that Gluesing would fire a “light gun that reverses the order of the old Wild West, [as it] is shot at a photoelectric target to turn on a signal light.” This trick was a

⁵⁰⁶ “Here’s Magician Who Explains All His Tricks,” Chicago Tribune, 3 June, 1933. Folder 14-288.

⁵⁰⁷ Ibid.

modern variant of one magicians had perfected in the mid-nineteenth century that involved using an electrical circuit to cause theater gas lamps to suddenly illuminate.⁵⁰⁹ In the House of Magic, high frequency currents would be used to “burn steel wool, [and] light [a] lamp held in hand.” According to one press release, Gluesing indicated that such “electrical novelties need only slight modifications to make them useful to the medical profession in combating illness.”⁵¹⁰ A House of Magic show for 1934 titled “Voice of the Atom” included a Geiger counter and a demonstration of how lead would muffle the “voice of the atom.” Gluesing and his staff also demonstrated ultraviolet lights. “[T]he invisible rays will be used to make invisible colors visible to the audience, while colors and designs plainly visible under ordinary light will completely disappear.”⁵¹¹ Stroboscope lighting effects were also demonstrated as were devices that showed sound waves, so the audience could “see” orchestral selections on a screen.

The House of Magic was so successful in 1933, that in 1934 General Electric opened other small “theaters” in its exhibit. One such performing space offered “The Romance of Lamps and Lighting,” a show which featured a historical collection of lamps that ranged from “oil lamps of the stone age” to

⁵⁰⁸ John Hix, “Strange As It Seems,” Chicago Daily Times, 25 September, 1933. n.p. Folder 14-327.

⁵⁰⁹ A forerunner of this trick that required an electrical wire to light hydrogen jets in a theater was presented by the magician Philippe in Paris in 1841. See Christopher, Illustrated History of Magic, 136.

⁵¹⁰ G.E. Simons. Press release. 22 June, 1934. Folder 1-6177. C.O.P. collection, University of Illinois.

modern mercury lamps, and the tiny “grain of wheat” lamp used during surgery. In the performance, engineers explained what light was and how colored lights combined to make white. They also showed “How lighting can alter the expression of the face of a statue—even to the point of making it appear to laugh with rapid changes of light.” Spectators were also invited to try a “new sight meter by which a visitor may select the intensity of light best suited to his eyes.”⁵¹² General Electric also opened a theater to present demonstrations of cookery and household appliances.

General Motors did not originally orchestrate their research marvels as carefully as General Electric. However, by 1934 they too arranged an entertaining show of “science magic.” Since the names “House of Magic,” and “Hall of Miracles” were already taken, they dubbed it the “Room of Mystery” and put it in place for 1934, proudly announcing it was both an air-conditioned and “light-controlled” room. Its centerpiece was an ultraviolet “fountain” “made of many minerals used in the Research laboratories in Detroit” that “provide[d] weirdly beautiful color effects.”⁵¹³ GM also included a stroboscope which made a “rapidly whirling crankshaft” seem to “stand still” and explained that automobile engineers

⁵¹¹ G.E. Simons. Press release. 28 April 1934. Folder 1-6177. C.O.P. collection, University of Illinois.

⁵¹² George E. Simons. “Lamps and Lighting.” 22 June, 1934. Folder 1-6177. C.O.P. collection, University of Illinois.

⁵¹³ General Motors Corporation. Press release. 10 May 1934. Folder 1-6212. C.O.P. collection, University of Illinois.

used the stroboscope to "detect moving parts that are out of alignment, causing vibration."⁵¹⁴

Contrary to gloomy predictions, the Century of Progress was both a financial and ideological success. Financially, it was the first and only world's fair to fully pay off bondholders. The second season ended with a profit of \$688,165. The fair had employed more than 40,000 people and generated as much as \$700 million in tourist revenues for local businesses, and, not surprisingly, local politicians attempted to make the fair a permanent fixture in Chicago.⁵¹⁵ Flourishing during the Depression, the fair suggested that demoralization need not be inevitable, nor the economic situation hopeless.

The clear value gained through such exposure emboldened corporations. After the exposition's close, GM concluded that it would befit a motor company to recycle its magic science show with a touring unit. After a year of planning, GM's "Parade of Progress" premiered in Miami, Florida. Eighteen streamlined trucks led the caravan of thirty-three vehicles on a nationwide tour of medium-sized towns with populations between 10,000 and 75,000, where town officials would be eager to cooperate, and GM could dominate public attention. The show's arrival in town would be announced with a parade down main street that would include local city officials, business leaders, and GM dealers. After the

⁵¹⁴ Joseph Ator. "Latest Magic of Scientists to Provide Thrills at Fair," Chicago Tribune, 24 May, 1934. n.p. Folder 14-248. C.O.P. Collection, University of Illinois.

⁵¹⁵ Findling, 142.

parade a large tent was set up for the shows. Admission was free and attendance superb.

The caravan promoted the GM message, strongly advocated by the research laboratory director Charles Franklin “Boss” Kettering, that contentment only bred stagnation. Showing off new technology and redesigned products could make people discontented, and such agitation was a boon to an economy that depended on planned obsolescence. Kettering explained, when “People begin to want things that they do not need....they begin to become more alert mentally, more willing to work, more willing to do the unusual.”⁵¹⁶ Kettering’s speech at the tour’s premiere in Miami explained the purpose of the Parade of Progress as follows, “During the Depression people got the idea that the world was finished. We are trying to prove that it is not....We are trying simply to sell you confidence in America, American industry, and American resourcefulness.”⁵¹⁷

A gifted speaker with a folksy manner, Kettering had long enjoyed giving amazing science demonstrations and trained many of GM’s lecturers. He had offered one of the first such lectures in 1916 to a Society of Automotive Engineers meeting held on a cruise ship on the Great Lakes. The lecture involved such tricks as “freezing a flower with liquid air, freezing mercury into a hammer and driving a nail with it, and burning iron wire in liquid air.” Like Tesla,

⁵¹⁶ Charles F. Kettering and Allen Orth, The New Necessity: The Culmination of a Century of Progress in Transportation (Baltimore: Williams and Wilkins Company, 1932), 33.

⁵¹⁷ *Ibid.*, 219.

Kettering used high frequency electricity to light lightbulbs held in his hand; Kettering also offered the trick of frying eggs in a skillet that rested on a cake of ice.⁵¹⁸ The Parade of Progress, in addition to displays about automobiles, featured Kettering-styled lectures. Posters highlighted such wonders as “See Frozen Motion”—a reference to stroboscope effects—“Bend a Railroad Bar by Hand,” and “See the Law of Gravity Defied!”⁵¹⁹

Adopting Ford’s strategy at the Century of Progress, the GM “science circus” did not involve any direct sales of automobiles. After opening in February 1936 in Florida, the traditional winter resting grounds for many circuses, the GM Parade of Progress, also titled the “Caravan of Science,” visited approximately one town a week through 1938, before settling in to the 1939 World’s Fair in New York City.⁵²⁰ A “Midget Caravan” was also developed to visit towns with populations of 5,000 or less. The caravan spread goodwill and was designed to remind the public of GM’s message that the “world was not finished.”

The Parade of Progress, visited by as many as seven million people, was a masterful public relations campaign. With about one-third of each town’s populace attending, the visiting “science circus,” like the mythical circus of Dr. Lao, took the small town public’s mind off its economic woes with its free shows. GM did not offer Lao’s bill of snake charmers and exotic acrobats but instead

⁵¹⁸ Thomas A. Boyd, Professional Amateur: The Biography of Charles Franklin Kettering (New York: Dutton, 1957), 218.

⁵¹⁹ Advertisement reprinted in Marchand, Creating, 289.

exotic technologies and displays from its research laboratory. The Parade of Progress may have brought less of the shock of the new to small town America than had Charles Came's show of the nineteenth century, yet it succeeded as part of a larger corporate effort to instill in an anxious public the confidence that technology and corporate innovation would bring new opportunities.

The Million Volt Man

On the midway of the 1939 Golden Gate Exposition in San Francisco, in a modest auditorium, a young evangelical preacher named Irwin Moon offered the throngs an escape from nude fan dancers, human oddities, and other carnival displays. Instead of traditional fire and brimstone sermons, however, Moon surrounded himself with electrical equipment; for the climax of one sermon, he jumped up on a transformer that sent a million volts of high-frequency alternating current through his bare feet, causing forked lightning to explode from the metal thimbles on his fingertips. Moon's co-sponsors, the Christian Business Men's Committee and the Moody Bible Institute, deemed the show a success. One of the groups leaders reported that Irwin Moon's four "Sermons from Science" had helped these groups distribute nearly two million evangelical pamphlets during

⁵²⁰ Roland Marchand, *Creating*, 283-91.

the fair's two-year run, prompted "hundreds" of conversions, and evoked "valued prayers" for the indifferent as well as for the "convicted but not converted."⁵²¹

Moon indulged in the same sort of "gee whiz" science perfected earlier in the 1930s by lecturers from General Electric, General Motors, and other corporations. An early testimonial letter that Moon solicited insisted that his lectures and demonstrations were "on par with those given by representatives of the General Electric House of Magic and others representing organizations of that type..."⁵²² Moon's posters heralded such marvels as "SEE Steel floating in air...Tiny living creatures enlarged over 2,000,000 times" and "HEAR Music made with a flashlight...Molecules moving in a bar of ordinary steel."⁵²³

In his sermons he offered demonstrations of "gee whiz" science and technology but added theological commentary. To Moon, technology offered a modern source material for parables. Moon was an evangelical minister who refused to shy away from science. Instead, he sought to convert his audiences by demonstrating the hidden wonders of the world and insisting that they were all part of a divine pattern. His goal was to reach educated young people of his generation who were likely to have drifted away from religion and would indeed shy away from the typical evangelical revival meeting. Moon would have been thrilled to attract the sort of bright young people, often from conservative

⁵²¹ Tom M. Olson, "World's Fair at San Francisco Ends Forever," Now, circa 1940. Clipping. Irwin Moon folder, Moody Bible Institute Library (MBI).

⁵²² F.O.McMillan to P.V. Jenness. 29 October, 1938. Irwin Moon folder, Moody Bible Institute Library (MBI).

Christian backgrounds, then surrounding ESP investigator J.B. Rhine at Duke University. As his publicity posters often put it, Moon offered the "First Century Gospel in a Twentieth Century Manner."

His career reveals how scientific wonder shows could be used for strictly religious purposes. Science demonstrations were the bait, conversions the goal. But to succeed, the science demonstrations needed to instill wonder and awe. Moon's version of the "million volt" demonstration, for example, repositioned the Tesla demonstrations of the 1890s, which showed the inventor "in the Effulgent Glory of Myriad Tongues of Electric Flame After He Has Saturated Himself with Electricity." If Tesla chose to cast himself as a demi-god, Moon cast himself as a modest Christian humbled by the awesome powers of God. Even though such "Tesla coil" tricks were common to vaudeville of the early twentieth century, by 1938 Moon's religious recasting of the exhibition was remarkable enough for a photograph of Moon to appear in Life magazine a year prior to the Golden Gate Exposition.

Moon's demonstrations also offered an updated version of Charles Came's shows of the nineteenth century. Came had mixed explanations of the solar system with magic lantern slides of the Holy Land, slides of microscopic light, sparking electrical effects, and lectures on phrenology. Came's sparking electrical equipment and the "thunder house" that collapsed when struck by a bolt of

⁵²³ Poster, "Startling Scientific Spectacle." MIS.

electricity gave way to Moon's million-volt demonstration. And Moon, like Came, evoked the “wonder” of science by demonstrations of the great and small—the macrocosmic and microcosmic, the universe as revealed by the telescope and microscope. Such contrasting scales of perspective could make the human perspective seem fresh and new and of great value. For Moon, if not the religiously indifferent Came, Nature and its intricate patterns gave testimony to the existence of God as the Great Designer. Just as Came was fascinated with the early psychological theories of phrenology, and its self-help agenda, Moon could offer musings such as "the soul of man needs to be satisfied by union with God just as chemical elements seek union with others to preserve their stability."⁵²⁴

Moon was born in 1907 in Grand Junction, Colorado. His father was an ostrich rancher. As a youth, Irwin Moon had been a football player and daredevil. He also was a tinkerer who put together radio transmitters, likely read Hugo Gernsback's radio magazines, played pranks that included giving other family members electrical shocks, and received a ham radio license at age 12. During his youth, after “wandering into a revival meeting,” he became a convert to fundamentalism. He gave up his pursuit of a scientific career and began studies at the Moody Bible Institute in Chicago and several bible institutes in Los Angeles.

In 1929 Moon became the pastor at the Montecito Park Union Church in Los Angeles. According to his own lore, it was while trying to reach out to young

⁵²⁴ "Atomic Structure of Matter Shown in Lecture," Star-News, 24 May, 1944. n.p. Irwin Moon

members of this church in youth group activities that he began to revive his own interest in electronics and science. In 1931 he offered the youth group a lecture on “The Microscope, the Telescope, and the Bible.” This lecture, perhaps similar to one of Charles Came’s magic lantern shows, involved colored slides with images of the microcosmic and macrocosmic, and he soon expanded it to include stroboscopes, photographic equipment, and sonic instruments.⁵²⁵ He was invited to other churches and schools. In 1937 he resigned his pastorate to lecture. In 1938 his spectacular million volt demonstration was featured in Life magazine, and in 1939-40 he performed daily on the midway at the Golden Gate Exposition.

Moon’s determination to bring science to the pulpit went against the grain of fundamentalism’s anti-intellectual and anti-science stances of the 1920s. If science and fundamentalism had coexisted until the early twentieth century, the Scopes Trial polarized these two affiliations during the 1920s. Though a strong-willed person, Moon’s decision to preach with science-based lectures was not without its personal cost. Looking back, his wife commented that after his conversion he had “given up on it,” that is, his interest in radio and other scientific gadgets, as it was “not the right thing.”⁵²⁶ One press release also remarked that after his conversion, “the prized radio transmitter was given away. The electrical

folder.

⁵²⁵ James Gilbert, Redeeming Culture (Chicago: University of Chicago Press, 1997), 123.

⁵²⁶ Personal interview with Margaret Moon. 16 December, 2000.

and mechanical playthings were packed up.”⁵²⁷ Moon reported agonizing over his later decision to use scientific equipment for religious purposes. According to an account in the Sunday School Times—based on one of Moon's press releases—he earnestly explored whether science ran counter to his faith. He at first “wondered often whether the Lord had wanted him to give up his science. Perhaps the Lord only wanted him to be willing to give up those laboratory toys.” The fact that his technical know-how endeared him to young people emboldened him. As the article notes, “Prayerfully and cautiously he began to use his God-given scientific ability...” He continually searched his bible to determine if “science had a place in his ministry.”⁵²⁸ His wife insisted he “began to see how to use it [his scientific knowledge] to show the accuracy of the bible.”⁵²⁹

The turning point, according to one account, came when he looked into a secondhand store window and saw an empty mahogany carrying case that would be ideal for one of his bulkier transformers. He had only a dollar and ten cents in his pocket. According to the legend he prayed to God that this be a test. If the money in his pocket was enough and if the case indeed fit his ungainly transformer, he would let this be a sign that he was permitted to bring science into his ministry. The case cost him ten cents; he rushed home with it and the transformer was a perfect fit. The sign Moon had needed had been provided.

⁵²⁷ Moon biography, n.d. MBI.

⁵²⁸ Charles J. Miller, “Sermons from Science,” The Sunday School Times, n.d., n.p. Circa 1940. Clipping. MIS.

“Irwin Moon would be a preacher-scientist.”⁵³⁰ Whether apocryphal or not, this story implies how gravely Moon weighed his ambitions against the fundamentalist culture that surrounded him. The bitter battle over the teaching of Darwinism in the 1920s had galvanized most fundamentalists; in the 1930s, members of this community regarded science as synonymous with atheism. Moon’s “parable of the transformer” points to how difficult this decision had been for him. He had crossed a border and could justify it best with the image of a transformer which shifts voltages up or down to allow electronic equipment to connect and run efficiently. The carrying case and his prayer, however heartfelt, permitted him to “transform,” and so validate his desires and ambitions. Ultimately with the transformer he hoped to transform his public by initiating conversion experiences.

If this parable were not enough, in its profile of Moon the Sunday School Times offered another story that indicated that providence was on Moon’s side. He decided on his own that “Sermons from Science” would be a great exhibit for the Golden Gate Exposition. However, he had no sponsorship. On the spur of the moment, Moon drove to consult with Tom Olson, a leader of the Christian Business Men’s Association of the Bay Area. Upon his arrival, Olson announced that Moon was the answer to his organization’s prayers. The association had recently been told that the fair building dedicated to “Business Efficiency” that

⁵²⁹ Personal interview with Margaret Moon. 16 December, 2000.

they planned to base themselves in would not be built and they were casting about, praying in fact, for help with a new approach. Moon's energetic and innovative "Sermons from Science" would be an ideal vehicle, and a simple building on the midway an ideal, if paradoxical forum. Providence had again emerged into human affairs. This story was a little too neat—and had been tailored slightly, to amplify its "providential" quotient. A Christian Business Men's Committee pamphlet indicates this second "miracle" was more matter of fact. Moon telephoned and made an appointment to see Olson in Southern California. During the appointment, after hearing Moon's proposal, Olson urged Moon to come with him to San Francisco to propose the "Sermons from Science" project to the Christian businessmen's group at the committee's annual dinner for the following week.⁵³¹ The blind workings of providence are not as apparent in this rendering. Regardless, Moon soon was performing at the Golden Gate Exposition, in a building on the midway. As the Sunday School Times' author put it, "A church had been built that looked like a laboratory on a street that was a midway. It was like Christ going to the publicans and sinners."⁵³²

At the Golden Gate exposition, Moon perfected three lectures that would remain at the core of the teachings he and other disciples eventually gave under the auspices of Moody Bible Institute. The first, which dealt with the wonders of

⁵³⁰ Miller.

⁵³¹ Arnold Grunigen, Jr., "Irwin Moon Presents His Startling Words." Pamphlet. Irwin Moon collection. MBI.

light and color, was titled “Christ the Light of the World.” The second dealt with sound, perception, and voice recordings. The third lecture, his “million volt” demonstration, was titled “The Scientific Necessity for the New Birth.” Each lecture relied on equipment and techniques familiar to G.E.’s Gluesing and other industrial science showmen. Moon, however, added a layer of moral commentary to each of these demonstrations.

Moon grouped his sermons around several key themes: the limitations of a materialistic worldview; the limitations of the human sensory apparatus; and the reality of unseen forces. Moon and his later “Sermons from Science” disciples liked to say, disparagingly, “Today it is popular to consider man as nothing more than a pile of chemistry and physics—a sort of beefsteak with a nervous system.”⁵³³ Moon would attempt to show that such materialism had dubious scientific standing. He also sought to insist that the gap between religion and science was unnecessary—a Christian science could be attained. “A true scientist knows that he is only reaching for truths which always have been there and have been there because of God. Religion seeks God and truth in another direction.”⁵³⁴ This seems a strained version of Millikan’s “separate spheres” philosophy that insisted science and religion could co-exist. If Millikan preferred the two categories never intermix, Moon felt it necessary to seek God below the surface of

⁵³²Miller.

⁵³³ Press release, Moody Institute of Science, circa 1950s, for television series based on lectures and films. MBI.

all scientific truths. But the main theme Moon relied on was the same that previously had encouraged Spiritualists and parapsychologists—science established both the limitations of man’s senses and the reality of the “invisible.” If science could prove that invisible forces operated in the universe, it was then not far-fetched for the religiously-minded to make a similar argument for unseen spiritual forces. By the 1950s, Moon had refined this formula to insist that “Many of us have missed God simply because we haven’t been in tune. That’s why God said, ‘unless a man be born again, he cannot see the kingdom of God.’”⁵³⁵

Two of Moon’s sermons focused on the limitations of human senses. In his sermon on "light," he offered optical illusions and lighting effects to remind audiences how limited were their senses and to urge them to accept the reality of the unseen. Throughout, he would draw out the morals from such demonstrations. His discussion of the prism led him to preaching of the "pure white" light of Jesus which contained all the other colors of light. To illustrate simple miracles captured in light, he showed his own efforts in time-lapse motion pictures, filmed in his house. Footage included that of a seed sending down roots, stems and leaves growing, and a plant then flowering, as well as footage of close-ups of caterpillars fighting and “a fly’s foot magnified three million times.”⁵³⁶ Stroboscopes, ultraviolet light and other devices would also be employed. A

⁵³⁴ “Evangelist in Scientist’s Role Refutes,” Buffalo Courier, 19 October, 1938. Clipping, n.p. MBI.

⁵³⁵ “Facts of Faith.” Moody Bible Institute pamphlet, circa 1950s.

moral could also be drawn from ultraviolet light, which could make plain stones beautifully iridescent, and suggest the hidden wonders of the world and the soul. In his "sound" lecture, Moon also lectured on the limitation of human senses, using electronic eavesdropping and recording devices and other sonic displays. These served Moon as material for a sermon on how God records all of one's deeds—proving one's need for repentance.

Of these sermons on sensation, George Speake, a disciple of Moon who carried on the sermons after Moon began to concentrate primarily on evangelical film-making in the late 1940s, would explain, "My purpose is not to amuse people with parlor tricks but to show that eyes and ears are such tragically feeble instruments in some realms of nature that man is reduced to the functional stature of a jellyfish in a symphony orchestra."⁵³⁷ Moon and later Moody lecturers of course also intended to amuse spectators with their parlor tricks. In his early lectures, Moon liked to use a powerful directional microphone to record whispered conversations of audience members prior to a performance and play them back during the show. During his "sound" lecture he would also play higher and higher frequency tones, asking the audience whether they could still hear them. Inevitably, people would continue to raise their hands after he had turned the equipment off. When he toured military bases, during and after World War II, giving his sermons, Moon liked to convince soldiers to inhale helium and

⁵³⁶ Lecturer's Demonstrations Stir Auditorium," Star-News, 23 May, 1944. n.p. MBI.

transform their manly voices into “lispering falsettos,” or as his publicity material put it, “to speak in the helium dialect.”

In the crowd-pleasing "million volt man" sermon, Moon electrified himself with a million volts so that sparks flew from his body. Life magazine photographed this spectacle in 1938, and in 1941, John Hix in his syndicated "Strange As It Seems" column featured a sketch of a suited man with hands upraised and fingers shooting out flames. "Pillar of Fire!" ran the heading, and the text added, "Demonstrating Hidden Wonders of Creation in his "Sermons from Science," Rev. Irwin A. Moon lets a **million volt current of electricity pass through his body!**"⁵³⁸ During these performances, barefoot, or wearing only socks, he would climb up on a copper transformer. When the performer shouted, "On!", an assistant would throw a switch, causing the electricity to shoot through Moon's body and thimble-tipped fingers. On other occasions Moon would hold a piece of wood in his hands that would burst into flames. This “death and resurrection” display pointed to a clear moral. Moon would explain that he survived the electricity’s wrath because he was using a high frequency. At a lower frequency, electricity of the same amperage (or pressure) could easily kill a man, even at lower voltages. Moon’s lesson was that he and his audience needed to be “in tune” with God. All of mankind was in need of a rebirth experience—or

⁵³⁷ Press release, Moody Bible Institute. n.d. Moody Institute of Science box. MBI.

⁵³⁸John Hix, "Strange As It Seems," Cushing, Oklahoma Citizen, 16 October, 1941, n.p. Clipping. Irwin Moon File, MBI.

cosmic re-attunement—through which to leave sins behind. The later “Sermons from Science” lecturer George Speake would elaborate, noting that in order to survive this trick he needed to obey natural laws of electricity and physics; did not he and his audience, therefore, need to follow spiritual laws as well? In such cases, ignorance was not bliss. Survival depended on awareness of law. Speake then would use the million-volt demonstration as a springboard for defining faith. He would ask the audience, following his electrification, if they now believed that standing on the transformer was safe. If they did, he would insist that faith must lead not just to belief but to action. He then would ask if they now were willing to stand on the transformer themselves.

With such demonstrations, Moon attempted to heal several cultural rifts. Not only did he need to live up to his billing as “The Harmonizer of Science and Religion,”⁵³⁹ but he also was insisting on the importance of scientific truths in a fundamentalist context hostile to science. To fulfill his agenda, he needed to convince sophisticated audiences that feats like watching “living objects die under invisible death ray” or “drab gray rocks display beautiful colors” had some scientific importance and were not pure “wonder.” But his fundamentalism, and his refusal to be a Christian modernist—a believer who also accepted modern scientific theories including evolution—required him to lecture on the scientific validity of Genesis. This last task led to some of his seemingly more absurd

⁵³⁹ Poster for Grand Rapids, Michigan performance, May 2. Circa 1944. MBI.

claims, for example that Methuselah could have lived 969 years because at that time on earth “a vast vapor canopy” shut out ultraviolet rays and slowed down the aging process. Likewise, that vapor canopy accounted for the fact that no rainbow had appeared until Noah and his crew saw one following the biblical Flood.⁵⁴⁰ Moon's wit and often unexpected explanations most likely threw hecklers off-balance while pleasing the already-converted.

In the first years of “Sermons from Science” Moon was frequently on the road, visiting such towns as Portland, Seattle, Grand Rapids, Chicago, San Antonio, El Paso, Houston, Dallas, Charlotte, Atlanta, and Buffalo. He did advance work, sending press kits that included advertisements, promotional photographs, and press releases that provided newspapers with pleasing copy. A typical newspaper advertisement could read, “Hear the Man who Thrilled Thousands at the Treasure Island Fair! SEE 1,000,000 Volts Discharge From a Human Body! SEE Metal Caused to Float in Space! SEE and HEAR Your Voice Projected on a Beam of Light! See and Hear Your Voice Recorded Inside a Tiny Thread of Steel! IRWIN A. MOON presents “SERMONS FROM SCIENCE” Unique! Startling! Convincing!”⁵⁴¹

His appearances were either solo or in tandem with other evangelists. He would present each of the three or four lectures on separate days. Success, on this circuit, involved the number of converts gained, or the number of the indifferent

⁵⁴⁰“Methuselah Lived On,” San Antonio Express, 18 November, 1941. n.p. MBI.

one could succeed in prompting to think seriously about religion. At the end of a performance, the evangelist would encourage people to “accept Christ.” A 1942 evaluation of a Moon appearance indicated that “about 25 hands were raised to the invitation to accept Christ on Thursday night. Many stood and voiced their acceptance on Friday night at both services...”⁵⁴² Sixteen years later, Moon's disciple George Speake reported of a performance series in Cincinnati, “They started out with quite a weak crowd on the first night there with only about 400 out but it did build up to about 1000 on the last night with a wonderful response to the invitation—over 100 indicated a desire to make a decision for Christ and many were in the inquiry room with them.”⁵⁴³

In the early 1940s, with the onset of World War II, Moon began to tour military bases, seeing young soldiers as ideal candidates for his sermons. Not only did they have a “masculine affinity” for science but likewise the “seriousness of war had set many of them to thinking about spiritual things.”⁵⁴⁴ Moon’s virile approach met with approval. In sermons such as “Stalin's Dream of Empire and the Fate of Europe,” he could underline fears that a monumental struggle between good and evil was still underway and help cement soldierly resolve. Army chaplains were thrilled with his lectures and wrote glowing reviews, indicating that Moon was ideal for entertaining and morally uplifting troops. For example,

⁵⁴¹ Advertisement. Portland, Oregon, *Journal*. 23 November, 1940. n.p. MBI.

⁵⁴² Mr. Lyons to Dr. Houghton. 11 July, 1942. MIS.

⁵⁴³ George Speake, “Informal Report from George Speake.” 30 April, 1958. MIS box, MBI.

one chaplain wrote, “His opening lectures at the Camp Theater was to a packed house, and he held his audience night after night. On several evenings the audience remained for as much as an hour and a half asking questions after the meeting was dismissed....his platform manner, with good natured and humorous presentation and rebuttal, has won him many friends as well as converts.”⁵⁴⁵ Another chaplain wrote that 4,000 men “of all faiths” heard his lectures and insisted they “were a milestone in confirming the faith of thousands who had already made their decision for God, and...challenged the indifference of thousands of others who have been on the ‘fence’, as it were.”⁵⁴⁶ Moon gained special favor with the Air Force and performed frequently for both officers and men. Soon he was performing along with comedians like Bob Hope under the auspices of the USO program.⁵⁴⁷

In the late 1940s, Moon trained George Speake, an Air Force pilot with an engineering background, to take over the “Sermons from Science” while he went on to create evangelical science films for the Moody Bible Institute—more specifically the Moody Institute of Science which Moon had helped initiate.⁵⁴⁸ The films that he and his assistants produced soon became important evangelical tools, often shown in tandem with the “Sermons from Science” lectures. In both

⁵⁴⁴ Publicity story. n.d. n.p. Begins, “Crackling, blue-violet lightning...” p.4. MBI.

⁵⁴⁵ M.D. Morrison to "Whom It May Concern." 3 June, 1942. Camp Haan, California. MBI.

⁵⁴⁶ Martin L. Thomas to Noel O. Lyons. 26 June, 1942. MBI.

⁵⁴⁷ Gilbert, 126.

the sermons and films Moon relied on the "argument from design." This argument, popular in the nineteenth century, insisted that the intricacies and wonders of nature proved they were the work of a conscious, intentional, designer. Moon's connections with the armed forces helped him inexpensively purchase from the military surplus cameras, lighting, and optical equipment for the film studio he set up in a former Masonic Temple in West Los Angeles.

What turned out to be a film studio began with the more ambitious effort of Moon and fundamentalist scientist F. Alton Everest to create a "Christian laboratory." The Moody Bible Institute funded this experiment in bringing together fundamentalism and genuine scientific research. Moon and Everest's initial proposal to Moody president Will Houghton in 1948 offered the assumption that the fundamentalist rejection of science was damaging the movement's ability to reach out to and convert modern-thinking people, including scientists. Society was the big loser. The fundamentalist Christian retreat from science since the Darwin debates of the 1920s had led to an "overwhelming skepticism regarding the activity of God in creation." Yet they believed that "many who are steeped in such materialistic teachings would give them up if

⁵⁴⁸ Gilbert provides an excellent account of Moon's ability to evangelize U.S. military troops, as well as a solid account of the development and impact of Moon's film projects. See Redeeming Culture, 121-145.

there were a reasonable alternative position stated in understandable scientific terms.”⁵⁴⁹

The planned Christian laboratory would produce and distribute scientific films and monographs, and develop a library. It would encourage, subsidize and direct scientific research and analyze the “moral and spiritual significance” of scientific developments. Moon realized that the "Christian Laboratory's" difficulties would be two-fold. "It will be necessary to sell the scientific world on the scientific value of the work. But, more important and still more difficult will be the task of selling the conservative Christian world on the fact that we are on their side, committed to the historic Christian position and not compromising modernists."⁵⁵⁰ This second difficulty was more easily met through evangelical film-making than through actual scientific research. The “Christian laboratory” saw little actual research; instead it became the place where Moon improved “Sermons from Science” apparatus, and produced a number of films that revealed the wonders of the world. Efforts to stimulate scientific research that could mesh with creationist beliefs carried over into Everest’s work with the American Scientific Affiliation that he led for the Moody Bible Institute.⁵⁵¹ At the film laboratory, Everest served as a science advisor to the film crew.

⁵⁴⁹ “Proposal for Christian Laboratory.” See “Correspondence (1939-1946) Having to do with the Founding of Moody Institute of Science. From the files of F. Alton Everest.” MIS box, MBI.

⁵⁵⁰ Irwin Moon to Will H. Houghton. 24 February, 1945. "Correspondence (1939-46) having to do with the Founding of Moody Institute of Science." MIS boxes. MBI.

⁵⁵¹ See Gilbert for a discussion of Everest’s related American Science Affiliation, 147-169.

The Moody Institute of Science films opened up Moon's "Sermons from Science" approach from that of a stage show to pictorial documentation of nature's wonders and of scientific breakthroughs with added moral commentary. Each film used innovative film techniques, whether close-up photography, underwater photography, time-lapse photography, or some of the first footage of open-heart surgery being performed. Their films of the 1940s and 1950s had titles such "God of Creation," "They Live Forever," "God of the Atom," "Voice of the Deep," "Dust or Destiny," "Red River of Life," and "The City of Bees." Moon worked fervently to give the films their sophisticated polish. The stunning nature photography of each film was accompanied by "relentlessly anthropomorphic" narration and a final scene showing Moon at a desk with his bible discussing the religious implications of the earlier footage.⁵⁵² The Moody Institute of Science distributed these films widely. They became useful tools, which along with "Sermons from Science" demonstrations provided shows for the armed forces under the auspices of the "character guidance" programs developed in the late 1940s.⁵⁵³ The films were technically impressive and often innovative. Eastman Kodak awarded Moon a gold medal in 1980 for "his contribution to the

⁵⁵² Gilbert, 131.

⁵⁵³ See Gilbert for a history of "character guidance" in the military and a look at how Moon tailored his Sermons for Science for that context. 98-100; 130-144.

advancement of the educational process through many unique uses of the art of the motion picture."⁵⁵⁴

George Speake, who inherited and refined the “Sermons from Science” lectures in the 1940s, in turn trained other lecturers, including Keith Hargett, Dean Ortner, and James Moon, son of Irwin Moon. However, Speake continued as the primary lecturer for Sermons from Science from 1948 until the 1970s. Over that period of time he and associates made appearances at the Seattle World's Fair (1962), the New York World's Fair (1964-6), the Montreal World's Fair (1967), the Munich Olympics (1972), Spokane's Expo '74, the Montreal Olympics (1976), and the Atlanta Olympics (1996). At Moody pavilions they would alternate film screenings with live demonstrations.

A script for the sermon on light reveals that these demonstrations were fairly sophisticated. They covered such phenomena as the psychological concept of "persistence of vision," demonstrated with rotating discs and motion pictures; they also used photo-electric cells to create strobe effects and to create music from an interrupted flashlight beam; a "modu beam" they projected across the room also became converted to music. Demonstrators discussed the range of theories of light including wave theory, "'puscular' theory" (corpuscular), and quantum theory. They would emphasize that each of these theories was merely an educated guess. They would also discuss the production of light and the theory of

⁵⁵⁴ "Rev. Irwin Moon, 78, Science Film Producer." (Obituary.) Chicago Tribune, 4 May, 1986,

color. At this point a sodium vapor lamp would be switched on that would turn the theater from a world of color to one of gray and yellow. The eerie effect could make audience members feel they had suddenly entered the world of a black-and-white film. Next the lecturers would discuss how narrow a section of the electromagnetic spectrum humans could distinguish and respond to. This led to the conclusion that "the possibility that a spiritual realm exists apart from the physical realm is not at all fantastic."⁵⁵⁵

Even though we cannot trust our five senses, the lectures went on to insist that we should put our faith in unvarying scientific laws. Volunteers were invited to pick up and move a suitcase that contained a twenty-four pound revolving gyroscope. Their inability revealed "the laws of gyroscopic rigidity." Chemicals were also shown to follow unvarying laws. One solution the lecturers mixed up—of iodine and starch—would, after a given length of time, turn black, depending "upon the quantity and concentration of the chemical compounds." This and other demonstrations led to the conclusion that "unvarying laws control all of the heavenly bodies, and the sub-microscopic world as well." Such an ordered universe led to the conclusion that "the universe is controlled by an infinite wisdom and creative genius that is concerned with us." Humanity was "his crowning work."⁵⁵⁶ Not only could science and religion coexist, but humanity's

n.p. Clipping. Moon collection. MBI.

⁵⁵⁵ "Preface to Sermons from Science Outlines." n.d. MIS box.

⁵⁵⁶ *Ibid.*, 9-10.

centrality to creation was restored over the course of this lecture. All of the requirements for a wonder show—to demonstrate the miracles of both science and the human soul—had been fulfilled.

More Sugar for the Science Pill

The Sermons from Science lectures by Moon, Speake, and others demonstrate the flexibility of the electrical wonder show model with its mixture of mystification and technology. Corporations in the 1930s relied on such shows to make their case to the American public for the vitality of the big business model for prosperity. Eager for funding and recognition, academic and research scientists helped publicize the importance of science to industry, and sought to bridge the gap between the laboratory and the man on the street.

In slight contrast, Moon, though certainly not a leftist, could critique America's materialistic culture; like a latter-day Whitman, he could insist that materialism alone was not enough. American society needed spiritual values as well. Yet he largely stands as one of the great emblems of the "consensus" vision of the 1950s. The consensus vision required a united front against the dangers of world communism, and an attempt to deny any great ideological rifts in American beliefs. Not only was America free of ideology with its often-evil consequences, but the social fabric was sound and full of integrity. This worldview insisted that

racial hatred, class consciousness, disparities of wealth and poverty, dread of the atomic bomb, and any form of social discontent be ignored or suppressed as “deviant.” The Moody Institute of Science’s long-standing relationship with the armed forces suggests how Moon's message could be of appeal during the Cold War era. American military readiness required both technically-adept and morally-sound soldiers and leaders. Moon’s efforts to be a “harmonizer,” to bring together science and religion, mainstream thought and religious fundamentalism, as well as the warriors of the military with the peaceful messengers of the Bible, make him an important symbol of the post-war consensus years.

Other showmen also worked with the science-magic model in the 1950s. In 1951, thirteen years after Moon appeared in Life, the magazine published a color photograph of a young woman in vaguely Balkan garb standing on a platform while blue bolts of electricity shot from her fingertips. The headline was “A Young Lady Impersonates an Electrode.” Beneath the photograph, the copy explained, “wearing thimbles to avoid burns, Betty Brown smiles as a million volts of electricity spray from her upraised fingers.”⁵⁵⁷ She was the 15-year-old daughter of showman Bob Brown, who ran “Bob Brown’s Science Circus.” He performed at schools, luncheons, and made at least one television appearance on ABC in Chicago. Acts included the working out of mathematical problems, static electricity generators that made volunteers' hair stand on end, sparks from

⁵⁵⁷ “A Young Lady Impersonates an Electrode.” Life. 3 September 1951.

transformers shooting across a gap to light a young assistant's cigarette, and the million-volt trick pioneered by Tesla and featured in Moody Institute of Science performances.⁵⁵⁸

An article about Brown, "Sugar for the Science Pill," suggests that even prior to the launching of Sputnik, Americans were concerned with finding ways to interest students in science to maintain American technological and scientific proficiency. Befitting the consensus mentality of the 1950s, Brown's show sought to cleanse science of the negative images common since the launching of atomic bombs on Hiroshima and Nagasaki, on Pacific atolls, and the western American deserts. The atomic industry had launched a campaign to reassure the public about "the peaceful atom"⁵⁵⁹ and Brown was on the vanguard. A journalist wrote that Brown "hopes the time will come when North Carolina's only Circus will be the first in America to use atomic power. Made, of course, from uranium dug up right out of our own Blue Ridge mountains."⁵⁶⁰

As the next chapter will argue, the nuclear dread of the 1950s could not be so easily sugared-coated. As many of the decade's psychologists indicated, beneath the calm facade of the consensus years lay turmoil and anxiety. In that context, one fringe community seized on the technological, not to rally support for American industrial know-how, but rather to question the intelligence and

⁵⁵⁸ Bill Sharpe, "Sugar for the Science Pill," *The State*, 12 January, 1952, 12-13. Swezey Papers, Archives Center, New Museum of American History.

⁵⁵⁹ See Paul Boyer, *By the Bomb's Early Light: By The Bomb's Early Light: American Thought And Culture at the Dawn of the Atomic Age* (New York: Pantheon, 1985), 109-30; 291-302.

rationality of the Cold War's political and military leaders. In the same decade that Bob Brown and the Moody Lecturers performed, the flying saucer subculture emerged to create its own cosmic wonder show, mixing technology with religious yearning to challenge the dominant culture's fiction that all was well.

⁵⁶⁰ Sharpe, 13.

Chapter Seven: Flying Saucers

In Yucca Valley California in 1953, George Van Tassel arranged the first Giant Rock Space Convention, a gathering of flying saucer enthusiasts that continued to meet annually until 1970. In his desert retreat Van Tassel, a former test pilot for Howard Hughes and safety inspector for Lockheed, had built a landing strip and a hotel and created a council room in a cavern at the foot of Giant Rock mountain. At Van Tassel's first convention, over five thousand people came to discuss flying saucers, hear lectures, scour the desert skies for saucer sightings and stop at booths to purchase books and talk to recent "contactees" who, like Van Tassel, claimed to have met beings from outer space.⁵⁶¹

Narratives of contact with aliens were central to the community to which Van Tassel and other contactees catered. According to Van Tassel, one evening in the summer of 1952 he had gone into a trance at the base of Giant Rock, and soon after met the "Council of Seven Lights." This council, made up of wise beings

⁵⁶¹ David M. Jacobs, The Flying Saucer Controversy in America (Indiana University Press, 1975), 121.

from beyond, were then circling the earth on a spaceship.⁵⁶² Van Tassel's tale, which involved not a physical encounter with aliens but an encounter on a spiritual plane with these beings and their spaceship, demonstrates the blending of futuristic technology with the occult that was a key component of the contactee subculture of the 1950s. If the movement relied heavily on the modern mythology of space travel culled from science fiction books and movies, it had roots in the older lore of the Spiritualist and occult communities. In such circles, contacts with spiritually advanced beings from other worlds was common. At flying saucer conventions, attendees learned that the angelic "Space Brothers" were monitoring earth and attempting to heal the planet of its evils, not the least of which was the era's nuclear arms race. The 1950s UFO movement's optimism, later to fade into more paranoid visions of aliens, can be traced to occultist tales involving spiritual guardians on the astral plane.

Conventions like that at Giant Rock served as early prototypes of the New Age expositions common today, bringing together health faddists, religious fundamentalists preparing for Armageddon, occultists of various sorts, and flying saucer enthusiasts. A bemused journalist attending a saucer convention in 1959 reported details such as the exhibition of a prototype flying saucer and a handsome couple costumed in blue shirts coated with mystic symbols who claimed to be Prince Neasom from the planet Tythan and Princess Negonna,

⁵⁶² Ron Story, editor, Encyclopedia of Ufos (Garden City, NY: Doubleday, 1980), 381.

presumably of the same planet, though she had a distinguishable New York accent.⁵⁶³

Other flying saucer gatherings slowly developed even more elaborate pageantry to dramatize their optimistic vision. One such group, the Unarians, based near San Diego, whose roots trace to the 1950s, still offers annual Conclaves of Light in which attendees dress up in costumes that indicate their former lives on other planets, carry banners with the names and paintings of those planets, conduct healing sessions and encourage Space Brothers to land their saucers.

UFO sightings predated such conventions by only a few years; they became common soon after pilot Kenneth Arnold reported seeing “saucer-like” objects when he was flying near Mt. Rainier in 1947. Within weeks, sightings were reported in 35 states and Canada.⁵⁶⁴ The rage was on, encouraged by Hollywood productions and proliferating global reports. In the first six months of 1952, 16,000 newspaper articles were dedicated to the sightings. The U.S. military responded with numerous efforts to investigate the sightings, eventually leading to charges they were involved in a “cover up.”⁵⁶⁵

Serious amateur enthusiasts began attempting to establish the authenticity of such sightings, but a broader movement rallied around contactees like Van

⁵⁶³ Hal Draper, “Afternoon with the Space People,” *Harpers*, September, 1960, 37-40.

⁵⁶⁴ William Graebner, *The Age of Doubt* (Boston: Twayne Publishers, 1991), 21.

⁵⁶⁵ James Gilbert, *Redeeming Culture* (Chicago: University of Chicago Press, 1997), 230.

Tassell who had stories to tell about meetings with angelic otherworldly beings. The public enthusiasm for such tales illustrates the dread that undermined the apparent contentment of the post-war age. Panic over Communist incursions abroad and subversive infiltration of America as well as concerns about nuclear warfare led many of the era's social thinkers to describe it as an age of anxiety.⁵⁶⁶ The possibilities of suburban plenty could not calm all discontent. A distaste for the conformist mindset crucial to the proper enjoyment of the "populuxe" decade led to rebellious attitudes not only in the bohemian literary culture of the Beats, or the highbrow world of the mass culture critics, but also in the more outlandish setting of the flying saucer movement.

In her book Aliens in America, Jodi Dean has argued that the NASA launches of the 1960s and 1970s and the UFO contactee movement of the 1980s offered contrasting "theatrics of space."⁵⁶⁷ These productions offered different narratives of power and truth. Dean likened the NASA launches, with their new frontier rhetoric, to a glossy Broadway production designed to reassure the public of American superiority in the Cold War, while the 1980s UFO contactee community was offering a community theater rendition of a play like "The Fantasticks." To take this formulation back one step, the 1950s flying saucer enthusiasts were offering an even barer-bones production, more like that of a

⁵⁶⁶Rollo May, The Meaning of Anxiety (1950) examines the issue of existentialism and meaning, as do many of the works of theologians and psychotherapists of the post-war era, such as Erich Fromm, Paul Tillich, and others. In 1950, Leonard Bernstein composed the symphony, "The Age of Anxiety."

living room reading group. Their production, a pure product of the imagination, gained in sweep and ambition what it lacked in stage props, sympathetic media coverage, and credibility. Yet they had a good script, that, like dramas to come, required the galaxy as its backdrop.

For its devotees, the 1950s flying saucer movement scripted and produced a cosmic wonder show—a show well-suited to the paranoia of the Cold War era. While the Moody Bible Institute’s Irwin Moon and his disciples were offering wonder shows that blended a Christian message with demonstrations of remarkable technologies, contactees like Van Tassel were insisting on a new revelation and reporting that messengers from beyond had arrived, equipped with mystic technology and a vision of peace on earth.

Utopia was not far away. Van Tassel, for example, was hard at work developing, via instructions from Space People, an Integratron, a four-story electrical device armed with air turbines and jets which, when completed and calibrated by the space people, would rejuvenate the elderly.⁵⁶⁸ The UFOs demonstrated an apparently awesome advance in technology, while their inhabitants provided a message that it was not too late to correct the world’s ills and bring about a perfect society.

The 1950s UFO enthusiasts were not simply giving way to yet another of the era’s panics, such as those involving communist infiltration, the dangers of

⁵⁶⁷ Jodi Dean, *Aliens in America* (Ithaca: Cornell University Press, 1998), 11-21.

comic books, sexual molesters, and even overly-zealous "moms," but instead were announcing rapturously that help was on the way. If the actual viewing of UFOs and their inhabitants was an experience available only to the lucky few, conventions, club meetings and media images helped spread the wonder script to the merely-hopeful. At conventions, contactees and inventors paraded earthly spin-offs of otherworldly technology, even if these tended to be non-functioning models of devices that one day surely would change the world. Devices like Van Tassel's rejuvenating machine, the integratron, were common to this movement, as were tales of suppressed technology, or of utopian technology, the plans for which had been channeled from Space Brothers, or even the disincarnate spirit of Nikola Tesla.

Scholars such as Leo Marx and David E. Nye have often remarked on the American penchant for the "technological sublime." Grand displays of technology, whether the Corliss Engine at the Philadelphia Exposition of 1876 or the NASA rocket launches of the 1960s have induced public raptures and fostered community. Robert Rydell has argued that such emotions have helped strengthen public faith in technology and in the economic and political order that made it possible.⁵⁶⁹ In their conception of the flying saucer, UFO contactees promoted an alternative version of the "technological sublime." A technological sublime, most

⁵⁶⁸ Margaret Sachs, The UFO Encyclopedia (New York: G.B. Putnam's Sons, 1980), 352.

⁵⁶⁹ See Robert Rydell, All the World's A Fair: Visions of Empire at American International Expositions, 1876-1916 (Chicago: University of Chicago Press, 1984).

probably, of the mind. Unlike the choreographed shows of technological power at world's fairs or in military parades, narratives that glorified the flying saucer tended to undermine rather than endorse society's economic and political order. The imagined alien saucer technology was far superior to that of earth's aerospace industry. The wielders of this might sought not to conquer but to spread peace. If the governments and militaries of the United States and USSR had broken faith with the world's citizens, society's discontents instead could place faith in the higher authority the unearthly saucers represented.

The Cold War primed America to momentarily listen to the message from its fringe. Nationally broadcast television appearances by contactees like Van Tassel, as well as their appearances at conventions, and the plots of science fiction movies and books that connected flying saucers to the dawning of a new age helped promote the occultists' unorthodox worldview. Under the guise of the flying saucer movement, occultists of the 1950s critiqued Cold War society and science while re-envisioning the universe in terms of a cosmic wonder show. Inventor Nikola Tesla's posthumous appearance in the movement also suggests the connections between the mid-twentieth-century believers in a New Age, and the turn of the century followers of the New Thought.

Mars Revealed: Or, Seven Days in the Spirit World

Carl Jung was one of the first commentators to connect the flying saucer craze to a religious movement. In a 1959 monograph on flying saucers, Jung insisted that the movement, whether founded on pure fantasy or on actual observations, had importance for its creation of a modern legend based on “visionary rumor.” Jung argued that the flying saucer offered a divided world a symbol of wholeness, an integrated psyche, an integrated world, completion, perfection, even God. Jung saw the flying saucer as a visionary product arising from the schizophrenic cultural divide of the Cold War era, with the world’s populace split between two superpowers and two world systems. Jung noted of the flying saucer, “It is characteristic of our time that the archetype, in contrast to its previous manifestations, should now take the form of an object, a technological construction, in order to avoid the odiousness of mythological personification. Anything that looks technological goes down without difficulty with modern man. The possibility of space travel has made the unpopular idea of a metaphysical intervention much more acceptable.”⁵⁷⁰

Within the context of a religious movement, contactee tales need not be interpreted as fraudulent or delusional concoctions, but as defining narratives of a new creed, shaped to fulfill public desires. These narratives had their counterparts in shamanism, in the Spiritualist movement of the nineteenth century, whose adepts insisted on its scientific basis, and in the religious yearnings expressed in

⁵⁷⁰ Carl G. Jung, Flying Saucers: A Modern Myth of Things Seen in the Skies (Princeton

twentieth-century science fiction. The shamanic cosmology divides the universe into three realms: the middle world, or earth, which humans inhabit during this life; a lower-world filled with spirits of the dead, demonic figures, and evil shamans; and an upper world with celestial attributes.⁵⁷¹ One scholar has pointed out that many of the contactee tales followed the pattern of a shaman's initiation voyage to the upper realm.⁵⁷²

The 1950s contactee community largely developed from groups interested in Spiritualism and the occult. According to their cosmology, during earthly life it was possible for shamans or initiates to meet beings in other realms. Spiritualist cosmology lacks the shamanic realm of hell or the underworld; Spiritualists instead have spoken of a hierarchy of celestial realms through which a soul progressed after leaving the body. The number of such realms was usually pronounced to be seven.⁵⁷³ According to turn of the century occultists, each person inhabits a triad of 'bodies,' the physical, astral, and mental. These bodies simultaneously dwells on different planes. Trances, dreams, and other practices could help adepts explore these astral and mental realms. After death or during

University Press, 1978), 22.

⁵⁷¹ See "Shamanism and Cosmology," in Mircea Eliade's Shamanism, Archaic Techniques of Ecstasy. (New York: Pantheon Books, 1964), 259-287.

⁵⁷² Robert S. Ellwood Jr., "Religious Movements and UFOs," Encyclopedia of UFOs, 306-308. Ellwood has written numerous religious studies works, including The Fifties Spiritual Marketplace (New Brunswick: Rutgers University Press, 1997).

⁵⁷³ A discussion of the contours of Spiritualist cosmology can be found in R. Laurence Moore's In Search of White Crows (New York: Oxford University Press, 1977), 56-7.

sleep or a trance a soul left the physical level to dwell on the astral level and then move on to the mental world or heaven.⁵⁷⁴

The beliefs of both Spiritualists and contactees ultimately owe a debt to the work of the eighteenth-century natural philosopher and mystic Emanuel Swedenborg. Swedenborg was one of his age's leading natural philosophers, but he abandoned his studies of the natural world after a period of crisis in the 1740s when he underwent mystic experiences in which he met and journeyed with spirits and angels.⁵⁷⁵ The sweep of Swedenborg's vision and its influence is clear even from the title of one of his books, The Earths in Our Solar System Which Are Called Planets: and the Earths in the Starry Heavens; with an Account of their Inhabitants, and also of the Spirits and Angels there: From What Has Been Seen and Heard (1787).

In this tract Swedenborg explained how each of the planets and others "innumerable" have spirits and angels inhabiting them. He specifically detailed his encounters and conversations with such beings attached to the planets Mercury, Jupiter, Mars, Saturn and Venus, then several unnamed "earths." Contemporary sociologist Peter Berger has argued that the creation of a universe in which humanity has significance is the primary function of religion.⁵⁷⁶

⁵⁷⁴ Paul Oltramare, "Theosophical Society," in James Hastings, ed., Encyclopedia of Religion and Ethics, vol. 12. (New York: Charles Scribners and Sons, 1925), 302-303.

⁵⁷⁵ George F. Dole, editor, Emanuel Swedenborg: The Universal Human and Soul-Body Interaction (New York: Paulist Press, 1984), 10-12.

⁵⁷⁶ Peter L. Berger, The Sacred Canopy: Elements of a Sociological Theory of Religion (New York: Doubleday, 1990), 25-8.

Swedenborg attempted to fuse such a religious sense with a scientific vision; of the universe's purpose, he argued that not only is man made in God's image, but the universe is filled with populated worlds, purpose, and meaning, "from this consideration, that the starry heaven is so immense, and the stars therein are so innumerable, each of which in its place, or in its world, is a sun, and like our sun, in various magnitude: every considerate person is led to conclude, that so immense a whole must needs be a means to some end, the ultimate of creation, which end is the kingdom of heaven, wherein the Divine (being or principle) may dwell with angels and men."⁵⁷⁷ Not wishing to be regarded as a heretic, Swedenborg also insisted that on his journeys he discovered that Christianity was the religion that wise beings pursued on all the earths.

Occultist narratives of the turn of the twentieth century followed Swedenborg's tradition of depicting spiritual voyages to other worlds. In 1880, Henry A. Gaston published his Mars Revealed: Or, Seven Days in the Spirit World.⁵⁷⁸ C.W. Leadbetter, a prominent Theosophist, offered two cosmic travel books describing the astral plane and the "devachanic plane" in the 1890s. One had the title The Astral Plane: Its Scenery, Inhabitants and Phenomena (1895).⁵⁷⁹ Such books continued to appear in the twentieth century, such as one in 1922

⁵⁷⁷ Emanuel Swedenborg, The Earths in Our Solar System... (New York: J.B. Lippincott & Co., 1876 (1787)), 5.

⁵⁷⁸ Henry A Gaston, Mars Revealed (San Francisco: A.L. Bancroft, 1880).

titled The Planet Mars and Its Inhabitants: A Psychic Revelation by Iros Urides (A Martian).⁵⁸⁰

Such literature inevitably converged with the twentieth century blossoming of science fiction, which often depended on a quasi-mystical conception of space flight. Sociologist William Bainbridge has argued that early rocketry inventors such as Robert Goddard and Konstantin Tsiolkovsky, both dedicated readers of early science fiction, had mystical conceptions of spaceflight and of the liberating consequences of overcoming gravity. The German rocket scientists Hermann Oberth and his follower Wernher von Braun more clearly articulated this vision. Oberth's occultist studies underpinned his scientific work. He developed rockets with the fervent hope that he would be shaping a world that would enable him one day to reincarnate as a spaceship captain.⁵⁸¹ Von Braun, who was brought to the United States after World War II and became one of the prime rocketry experts for the military, was one of the more articulate spokesman for the position that spaceflight would prepare the human species for its next step in evolution, which would carry humanity into the heavens to populate the stars. The utopian premise that humanity's destiny is in the stars also underpins the ideology of NASA. This message was implicit in Neil Armstrong's "one small

⁵⁷⁹ These two books are Leadbetter's The Astral Plane: Its Scenery, Inhabitants and Phenomena (London: Theosophical Publishing Society, 1895), and The Devachanic Plane: Its Characteristics and Inhabitants (London: Theosophical Publishing Society, 1896).

⁵⁸⁰ Many other such volumes are listed in George M. Eberhart's UFOs and the Extraterrestrial Contact Movement: A Bibliography (Metuchen, New Jersey: Scarecrow Press, 1986).

step for a man, one giant leap for mankind" pronouncement when he first stepped on the moon.

The vision of humanity undergoing an evolutionary step as it left the planet for the stars, which flourished in the 1950s and 1960s during the space race, was introduced earlier in science fiction. H.G. Wells was likely the first to introduce the theme of a mutated human race, evolving to one prepared to reach for the stars, in his 1904 novel, Food of the Gods. Two bumbling scientists concoct the miraculous food Herakleophorbia, which ensures continued growth. Besides creating a variety of ecological disasters, the chemical creates a race of giant youths. At the end of the novel, Wells leaves us with an image of one of his new gods, wearing shining armor, "no more than a great black outline against the starry sky, a great black outline that threatened with one mighty gesture the firmament of heaven and all its multitude of stars."⁵⁸² Like turn-of-the-century Russian rocketry pioneer Tsiolkovsky and other visionaries who followed, Wells hints that the earth and its gravity were fit only for the stunted. The next step in evolution was for humanity to exit planet Earth.

A related theme common to science fiction, highlighted particularly in Arthur C. Clarke's Childhood's End (1953), was the notion that only an evolved human species could leave the earth. That evolution would require the gaining of

⁵⁸¹ William Sims Bainbridge, The Spaceflight Revolution (New York: John Wiley and Sons, 1976), 31.

⁵⁸² *Ibid.*, 254.

new mental powers. Science fiction novels in which characters have the ability to communicate telepathically are very common. In Childhood's End, Clarke proposed such powers would be a mere prelude to contacting a truly higher state of mind, the Overmind that controls the universe. Though he had an apparent distaste for religion, Clarke saw in parapsychology the basis, at least in fiction, for a new mythology.

To concoct its scripts of otherworldly judgement and help, the 1950s flying saucer movement relied on science fiction and occult narratives. UFO contactee tales of the 1950s fused the occult tradition with the evolutionary "spaceflight" vision—and, like Swedenborg, the originators of these tales established that such visions need not be heretical to Christian beliefs. The contactees of the 1950s all insisted on a religious interpretation of their experiences. The "Space Brothers" they met were angelic beings, much like the inhabitants of the shamanic upper world. In 1953, the same year that Van Tassell held his first Giant Rock Space Convention, George Adamski, a teacher of mysticism who also worked at a hamburger stand near Mount Palomar in California, published the first "nonfiction" narrative of contact with a man from a space ship in 1953.

Adamski's tale closely followed the plot and even offered similar design details as that of the 1951 Hollywood film directed by Robert Wise "The Day the Earth Stood Still." This was the first Hollywood film that featured flying saucers

that originated from outer space. In this movie, a visiting space-craft harbored an enlightened messenger who warned earthlings to end their violent ways. The film-makers fashioned the character of Klaatu, the visitor that came to warn earth, as a stern savior. When mingling with the earth's population, Klaatu took on the pseudonym of "Carpenter"—a name clearly associated with legends of the Christian savior. Likewise Klaatu, though betrayed and later killed by soldiers, underwent a technological resurrection on his flying saucer. Yet Klaatu, the saviour, was also depicted as a scientist who found more natural kinship with earth's scientists than with its political leader. "The Day the Earth Stood Still" also made the obvious point that Klaatu was a representative of beings with remarkable technological and scientific superiority. As is true in many occultist accounts of contacts with otherworldly beings, Klaatu looked human in appearance, but after his resurrection, and the shedding of his borrowed earth clothes, Klaatu put on a tight zipperless body suit of miracle fabric of the sort that aliens have ever since worn in science fiction adventure tales.

Adamski followed this script fairly closely. Adamski's description of the scout ship—or bell-shaped flying saucer—that left the large cigar shaped mother-ship to descend to the desert was reverential. "It was translucent and of exquisite color."⁵⁸³ He suspected it was a metal brought "from the opaque stage to a translucent stage" like carbon made into a diamond. "The splendour as it flashed

its prismatic colours in the sunlight surpassed every idea I had ever had about space craft."⁵⁸⁴ Adamski also offered photographs of the scout vessel to bolster the authenticity of his account.⁵⁸⁵

The Venusian space man who met Adamski at a distance from the craft was equally awe-inspiring. He had long sandy hair, was clothed in a seamless, otherworldly fabric, was unusually beautiful and made Adamski feel "like a little child in the presence of one with great wisdom and much love."⁵⁸⁶ Although Klaatu, in "The Day the Earth Stood Still," preferred to mingle with earth scientists, Adamski avoided the position that science and scientists were now earth's only hope. Like other fringe critics, Adamski refused to consider any authority figures optimistically. Instead, Adamski carefully rendered the visitation as one that was thoroughly religious in nature. As is common to the occultist script, and less so in science fiction movies, the aliens superiority was based in their spiritual advancement, more so than their technological or intellectual advancement.

A more powerful contact narrative of 1955, Orfeo Angelucci's The Secret of The Saucers, even more carefully paralleled the hero's meeting with the Space Brothers to older tales of religious or mystic initiations. Angelucci came from a

⁵⁸³Desmond Leslie and George Adamski, Flying Saucers Have Landed (New York: The British Book Centre, 1953), 206.

⁵⁸⁴ Leslie and Adamski, 207.

⁵⁸⁵ Photographs Adamski took of this bell-shaped craft suggest the aliens shared a 1950s-earthling design aesthetic. One debunker has identified the photograph as representing the disassembled top of a Hoover vacuum cleaner.

working class Italian-American family in Trenton, New Jersey, and reported a childhood full of illnesses and sensitivities—electrical storms, for example, pained him greatly. As a youth he fancied himself an amateur scientist and attempted at least one experiment which involved launching samples of the fungus *Aspergillus clavatus* into the atmosphere in a weather balloon. Later he moved to the west coast for his health, worked at Lockheed as a laborer, and unsuccessfully peddled a screenplay that detailed a trip to the moon. According to his account, while driving home from work one night in 1952, he felt ill, and saw a saucer glowing with reddish light on the road ahead of him, which ascended and disappeared. He pulled his car to a stop and saw two green circles ahead of him. When he drank from a goblet that appeared on the fender of his car he heard voices announcing they were friends from another world.⁵⁸⁷

Angelucci reported having numerous contacts in the months and years to come. One night after leaving a café and walking down a lonely street he felt a tingling in his arms and saw a fuzzy dome taking shape. He stepped in. The interior of this dome, he reported, “was made of an exquisite mother-of-pearl

⁵⁸⁶ Leslie and Adamski, 195.

⁵⁸⁷ Angelucci's visions that ensued after imbibing from the goblet in this and other tales, paralleled those that Aldous Huxley attributed to the visionary experience induced by hallucinogens; this at least suggests a parallel between the early mescaline and LSD experimentation among intellectuals in the 1950s and the more lowbrow flying saucer movement; in his 1954 essay "Heaven and Hell," Huxley talked of the drug-induced encounter with the "non-human other" and descriptions of "stones of fire" and other such translucent materials during hallucinogenic raptures—imagery reminiscent of that with which contactees described flying saucers. See "Heaven and Hell," in *The Doors of Perception* (New York: Harper and Row, 1990), 83-140.

stuff, iridescent with exquisite colors that gave off lights.”⁵⁸⁸ The room was empty but for a reclining chair also made of the same “translucent, shimmering substance.” The wall sealed up, the door vanished, and his feeling of peace and well being turned to panic. Sensing his shift in mood, his unseen escorts played one of his favorite songs, “Fools Rush In Where Angels Fear to Tread,” calming him. A window developed in this space-age bachelor pad giving him a view of a planet surrounded by a rainbow. Voices informed him that he was looking down at earth. His unseen escorts also informed him that despite its beauty, earth was a “purgatorial world” with hate, selfishness, and cruelty rising from many parts “like a dark mist.” The small scout vehicle then approached a “crystal-metal-alloy” ship. Inside, vortices of green flame appeared and voices further instructed Orfeo about earthlings’ need to follow a creed of love. Orfeo was told that Christ had originated as “an infinite entity of the sun” and “out of compassion for mankind’s suffering he became flesh and blood and entered the hell of ignorance and woe and evil” that was the earth.⁵⁸⁹ The Space Brothers, he also learned, functioned as recording angels, transcribing all of humanity’s thoughts and deeds.

At this point, Angelucci underwent a death and resurrection experience. He heard loud music and saw bright light and concluded, “I am dying...I have been through this death before in other earthly lives. This is death! Only now I am in ETERNITY, WITHOUT BEGINNING and WITHOUT END.” He heard a

⁵⁸⁸ Orfeo Angelucci, The Secret of the Saucers (Stevens Point: Amherst Press, 1955), 20.

voice announce, “Beloved friend of earth, we baptize you now in the true light of the worlds eternal.” Then he was bathed in peace and beauty.⁵⁹⁰ He was taught, essentially, that earth was a fallen planet, and that the flying saucers were symbols of mankind’s “coming resurrection from the living death.”⁵⁹¹ Angelucci learned that Communism, too, was a symbol of the earth’s fallen state, and of the evils that must be overcome. A Great Armageddon was approaching, possibly in the form of an atomic war, possibly in the form of a destructive comet, if humanity did not reform.

According to Theosophical beliefs, evil results when spirit becomes more deeply enmeshed in matter. Redemption involves freeing spirit from matter. Angelucci learned that “eventually all of mankind deep-drowned in Time and Matter will surface to reality when they recognize their basic unity of being... We wait now beyond the great, sad river of Time and Sorrows with open arms and hearts to receive among us our lost and prodigal brothers in that great day when they rejoin us as liberated Sons of God.”⁵⁹² The Space Brothers urged Angelucci to serve the higher truth and help others to gain a similar initiation. “You, Orfeo, have walked through the valley of the shadow of death and emerged in the eternal

⁵⁸⁹ Angelucci, 31-32.

⁵⁹⁰ Ibid., 34.

⁵⁹¹ Ibid., 103.

⁵⁹² Ibid., 102.

light. Help others to do likewise.”⁵⁹³ Braving ridicule, Angelucci sought to do so.

The book was the outcome of one such effort.

Following the aptly-named pioneers Adamski, our Adam, and Ange lucci, who met with angels, countless other chosen people announced that they had made contact with Space Brothers, leading one UFO writer to dub the 1950s the "golden age of UFO religion."⁵⁹⁴ One of the more representative was George King, an English occultist. In 1954, while in a Yogic trance, King received the message that he was "to become the voice of Interplanetary Parliament."⁵⁹⁵ During subsequent trances, King received teachings from several members of the Hierarchy of the Solar System, most importantly the Venusian master Aetherius. King's group, still extant, teaches an occult version of cosmic history, with nods to the great civilizations of Lemuria and Atlantis that are also featured in Theosophical teachings. Among the Aetherians practices is the "charging" of holy mountains throughout the world with prayer; the healing energy then stored will later be released to help the earth and humanity. The Aetherians also insist that an extraterrestrial satellite is now cleansing the earth and its atmosphere by employing "radionic" devices. Via instructions from Aetherius, King has also constructed various "radionic" devices—or spiritual batteries. During ceremonies, Aetherians wearing robes and medals charge these spiritual batteries—

⁵⁹³ Ibid., 135.

⁵⁹⁴ Ellwood, 306-308.

instruments mounted on surveyor's tripods. The stored energy is slowly to be released to the fallen world as needed.⁵⁹⁶

The Cold War anxieties that led to such efforts at healing humanity's ills often lay close to the surface. For example, in 1960, Gabriel Green, President of the Amalgamated Flying Saucer Clubs of America, a large contactee organization, decided to engage directly in politics. He mounted a brief "Space Candidate" write-in campaign for the U.S. presidency in 1960, then ran for California state senator in 1962 on a platform that insisted on ending nuclear testing and received approximately 170,000 votes in the Democratic primary.⁵⁹⁷

One of Green's political advertisements included slogans such as "Solutions instead of stalemates," "Survival instead of annihilation," "Peace instead of pieces," and "The true Stairway to the Stars instead of missile-fizzles and launching-pad blues." The smaller copy went on to insist that his goal was "to eliminate vested interest in inefficiency so that machines and automatic industry can be permitted to do the laborious work of man, and still distribute the abundance produced by those machines to those who need them." He called for many dizzying reform measures including better health care, improved dental care, shorter working days, unlimited education for all, an end to traffic jams, free

⁵⁹⁵ "Dr. George King: A Western Master of Yoga for the Aquarian Age." 21 August, 2000. www.aetherius.org/GeorgeKing/biography.htm, 2.

⁵⁹⁶ Douglas Curran, *In Advance of the Landing: Folk Concepts of Outer Space* (New York: Abbeville Press, 1980), 63-9.

⁵⁹⁷ Story, 157.

energy, human rights, and “The World of Tomorrow today, and UTOPIA now.”⁵⁹⁸

Such interests firmly establish the flying saucer craze as another instance in which a segment of the American public sought salvation through technological utopianism. In contrast to the somewhat dystopian weapons-building they were witnessing, Green, Angelucci, and others could join turn-of-the-century thinkers like Edward Bellamy in imagining a world in which technology and automatons would usher in a new millennium. One fulcrum the flying saucer movement relied on was the "technological sublime"—the religious reverence with which Americans could view technology. In this case, however, the impulse undermined hegemonic control. Far from being on public display for state occasions, the UFOs evaded efforts to sight them and confounded government authorities. Like Adamski and Angelucci, most of the early contactees held humble jobs that labeled them working-class. The otherworldly brilliance of flying saucer technology also undermined the value of corporate or military technology.

⁵⁹⁸ Story, 156. Advertisement from Los Angeles Mirror News, 22 July, 1960. np.

Nikola Tesla Unbound

The flying saucer community's wonder script often added the mysterious inventor Nikola Tesla to the list of otherworldly players. One of the more remarkable literary products of the flying saucer movement to do so was Margaret Storm's curious volume Return of the Dove (1959). Though very much a part of the "Movement" as flying saucer aficionados called it, Storm's work was less concerned with tales of contact than with the promotion of utopian technology and a vision of the unfolding cosmic wonder show. In her book, Storm, a fashion journalist and occultist, drew upon the theories of such systems as Theosophy and presented inventor Nikola Tesla as a New Age hero with a superb occult pedigree.

At the heart of this book's eccentric claims is Storm's announcement that Tesla had actually been from Venus, born on a spaceship in 1856 and soon after presented to his earth mother in Croatia. Storm explained that Tesla's mission was to bring utopian technology to mankind as part of the Aquarian Age program for the earth's redemption. Storm related that throughout Tesla's career, industrialists, politicians, and military leaders did their best to stifle the unearthly inventor's creations. But he never was vanquished. Even after death, as an ascended master, Tesla was available to help other inventors devise new technology—whether free energy devices, anti-missile defense shields, or flying saucers that could enter the etheric realm. Storm's insistence that Tesla was from Venus gave him kinship with the space people that contactees then were describing. The god-like Tesla

represented science that was spiritually aligned. In this way he embodied one of the goals of the more formidable occultist groups, the Theosophical Society, to smoothly fuse the religious and scientific worldviews.

Tesla was an ideal choice to serve as a figurehead for utopian science. Tales had long circulated of industrialists who had suppressed Tesla's revolutionary inventions, and of the U.S. military carrying off many of Tesla's secrets after his death during World War II. Many of these tales were rooted in Tesla's own outlandish proposals and genius for self-promotion. If the glorification began earlier, it solidified the year after his death, when John J. O'Neill published his biography, Prodigal Genius: The Life of Nikola Tesla. In the opening chapter, O'Neill described how Tesla fashioned himself into a "superman," and continued with, "Even as he walked among the teeming millions of New York he became a fabled individual who seemed to belong to the far-distant future or to have come to us from the mystical realm of the gods..."⁵⁹⁹ A brief look at his career indicates why O'Neill, then Storm and others began to promote Tesla as a cult figure in his later years and after his death in 1943.

In 1887, Tesla filed patents for devices that to this day underlie the alternating current power system. George Westinghouse purchased these patents and put Tesla's electrical power system into effect, first at the World's Columbian Exposition of 1893, and later at Niagara Falls. Westinghouse's patronage made

the young inventor a wealthy man, but Tesla was not content. Even as his alternating-current generation and distribution schemes were being realized, he attempted to develop an even more radical power transmission system—one that would require no transmission lines. As early as 1893, Tesla began describing his grandiose wireless energy distribution system in the press. His “world wireless system” would require no transmission lines and would treat the earth and its atmosphere as an enormous electrical system that could safely be disturbed. He and followers to come such as Storm believed his system would have destroyed the companies that then monopolized the power industry.

Tesla's world system would not only deliver telegraph messages and a universal time signal but also all the power that was needed to homes and possibly even to factories. His plan called for large broadcast towers, attuned to the same frequencies. Power from hydroelectric or coal driven turbines would be intensified by tapping into the earth's electrical field, using his “magnifying transmitter,” then beamed through the earth to home and factory antennas. In 1893, Tesla briefly explained, “The plan I have suggested is to disturb by powerful machinery the electricity of the earth, thus setting it in vibration. Proper appliances will be constructed to take up the energy...[supplying] the practical wants of life.”⁶⁰⁰ He believed the earth's own electro-magnetic fields could serve

⁵⁹⁹ John J. O'Neill, Prodigal Genius: The Life of Nikola Tesla (New York: Ives Washburn, Inc., 1944), 4.

⁶⁰⁰ “Nikola Tesla and His Wonderful Discoveries,” Electrical World, 29 April, 1893, 324.

as the carriers necessary to send such signals. In the same article, he spoke modestly of this device's ability to transmit "intelligence" through the earth, noting the telegraphic (or radio) capabilities might be limited to short messages and the establishment of "universal time [keeping]." Several years later, Tesla was more bold; a New York World article in 1896 reported that "Electricity soon [will be] as free as air...The end has come to telegraph, telephone companies...and other monopolies ...with a crash."⁶⁰¹

Conceivably, Tesla wished to centralize all such communication and power distribution systems. In one pamphlet, he indicated that his first transmission center would connect all telegraph exchanges, stock tickers, phone exchanges, and also distribute news from the news industry, transmit intelligence on separately tuned frequencies, offer private telegraph services to the government, transmit facsimile copies of documents and drawings, and broadcast universal time.⁶⁰²

Efforts to establish his revolutionary world system turned Tesla into a tragic figure. Wealthy investors, interested in wireless telegraphy, radio, and fluorescent lighting, gave Tesla capital which they felt he squandered on his grandiose and speculative experiments. His first such experiments were at his temporary Colorado Springs laboratory in 1899, where he amplified currents

⁶⁰¹ As quoted in Marc Seifer, Wizard: The Life and Times of Nikola Tesla, (Carol Publishing Group: Secaucus, N.J. 1996), 166.

⁶⁰² Pamphlet quoted in O'Neill, 255.

through the earth and caused a tower to emit huge strokes of lightning, ultimately shorting out the local power station, which, nevertheless, continued to offer him free power. Tesla's Colorado stay also added to the lore of extra-terrestrial life. Throughout the decade there had been public excitement about life on Mars; Tesla announced that he had picked up a radio signal from the Martians.

Having alienated backer John Jacob Astor with his Colorado experiments, in 1900 Tesla convinced J.P. Morgan to underwrite more experiments—putatively to establish a radio station that could signal across the Atlantic and bring news of yacht races. Ignoring such pragmatic aims, Tesla took pains to build the first magnificent link in his world system. Refusing offers of free electricity from Niagara officials, Tesla chose the site of Wardenclyffe, Long Island, so that he could commute daily along with a chef from the Waldorf-Astoria Hotel in Manhattan and continue to enjoy the high-life.⁶⁰³ He hired socialite Stanford White as his architect and spent three years building an enormous coal-fueled powerhouse and a research tower topped with a 55-ton sphere (or condenser) that could store electrical charge; below the tower a winding staircase spiraled down a shaft that plunged 120 feet into the earth, with grounding pipes dug in another 300

⁶⁰³ O'Neill argued that Tesla envisioned the Long Island site as the base for his wireless communications system, but planned to base his power system at Niagara Falls. See Prodigal Genius, 252.

feet. He explained "it is necessary for the machine to get a grip of the earth, otherwise it cannot shake the earth."⁶⁰⁴

In the midst of these engineering efforts, in 1901 Guglielmo Marconi succeeded in sending a wireless signal of the letter "S" from England to Newfoundland. Tesla ran out of funds before testing his system. When he asked Morgan for more money, Tesla only succeeded in alienating and infuriating the financier who refused any further funding. Morgan held a controlling interest in their company and after this fiasco kept all of Tesla's wireless power and radio-related patents locked up and, despite Tesla's pleas, refused to let new investors into the company to back Tesla's scheme. Morgan shifted his capital to Marconi's company instead. According to rumor, Morgan stopped backing Tesla after Bernard Baruch convinced him that Tesla's plans for free energy broadcasts, if successful, could undermine corporate interests, not to mention Morgan's investments in coal, copper, and railroads.⁶⁰⁵

With no funding sources, the Wardenclyffe Long Island, research site, the symbol of Tesla's great dream, stood abandoned without ever having been tested. Eventually in 1915, Tesla turned over the deed to Wardenclyffe to the Waldorf Hotel to pay a long-standing hotel bill of \$20,000. Tesla was no longer of high enough status to be encouraged to stay as a free guest. The hotel impounded all of

⁶⁰⁴ As quoted in Margaret Cheney, Tesla: Master of Lightning (Barnes and Noble: New York, 1999), 100.

⁶⁰⁵ Tesla biographer Seifer noted this rumor came to him by way of physicist and inventor Henry Puharich, who, in turn, heard it from earlier Tesla biographer John O'Neill. Seifer, 300.

the site's equipment. Despite Tesla's frantic efforts through the decades to raise money to power the station, it was eventually torn down. A year prior, in 1916, when it stood derelict, the Brooklyn Eagle wrote, "the place has often been viewed in the same light as the people of a few centuries ago viewed the dens of the alchemists or the still more ancient wells of the sorcerers."⁶⁰⁶

Tesla continued to invent but lost much of the immense esteem and popularity he had gained in the 1890s. Yet popular science magazines continued to celebrate him as a forgotten genius. Tesla also remained a somewhat freakish object of fascination for such eccentricities as his daily electrical baths to stimulate health, his love of the good life but insistence on celibacy, his announcement that Prohibition would cut down his life expectancy from 150 to 130 years, his pronouncements that he stayed fit and healthy by wiggling his toes every night several hundred times, and his penchant for feeding Manhattan's pigeons and healing wounded pigeons with electrical therapy devices. He also was known for his obsessive-compulsive disorders, such as a phobia about shaking hands, touching hair, or looking at an earring, as well as an obsession with the number three that required him to choose hotel rooms with a number that was a multiple of three and to circle a block three times before entering a building.

⁶⁰⁶ Cheney, 107.

In 1956, thirteen years after his death, the International Tesla Society helped arrange a celebration of the 100th anniversary of the idiosyncratic inventor's birth. The American Institute of Electrical Engineers dedicated its annual meeting to his memory. In 1956 the International Electrotechnical Commission adopted the name "Tesla" for the unit of magnetic flux density. Articles about Tesla, cast as a forgotten genius, appeared in many publications, both popular and technical. Popular Science even offered a cartoon version of Tesla's story in its July 1956 issue. Such publicity helped revive interest in Tesla, whom science fiction impresario Hugo Gernsback had long hailed in his publications.

In 1957, the year following the Tesla centennial, the U.S.S.R. gained worldwide-acclaim after launching Sputnik, the first man-made orbiting satellite. The Sputnik launch and subsequent Soviet space launches created an inferiority complex in America about the state of science and science education. The Sputnik launch gained universal acclaim, and even grudging admiration in America. For example, a New York Times editorial cartoon depicted the satellite circling the earth leaving a trail labeled: "man's quest for knowledge."⁶⁰⁷ An editorial in that same paper declared, "already it is clear that Oct. 4, 1957, will go down imperishably in the annals of humanity as the date on which one of man's finest

⁶⁰⁷ New York Times, 6 October, 1957, E3.

achievements was accomplished.”⁶⁰⁸ Amidst the excitement, panic set in over the weakened state of scientific knowledge and technological accomplishment in America. Weapons developer Edward Teller, for example, complained of "a tone deafness toward science in our society at large."⁶⁰⁹ The need to spend more on science education was particularly emphasized. The following year, Congress created NASA and passed the National Defense Education Act of 1958.

Against this backdrop, Theosophist Margaret Storm picked up the Tesla story in 1959. She transmuted Tesla from a tragic or pathetic figure, a man of grand but broken dreams who ended his days living in shabby hotels and feeding pigeons, into a cosmic hero. Stories of the 1890s such as Garret P. Serviss’s "Edison's Conquest of Mars" had glorified inventor Thomas Edison and made him into an adventure hero whose disintegrating ray weapon saved Earth from a Martian attack. In Storm's narrative, Tesla figured in a drama of even greater importance.

Storm placed Tesla and the Cold War era into a 25-million-year cosmic history. Following the teachings of Theosophy's founder Madame Helena Blavatsky, Storm insisted that Tesla’s and humanity’s story all related to a grand process of spiritual evolution. Earth's first Root Race, or the “self born,” had been

⁶⁰⁸ Ibid., E10.

⁶⁰⁹ Time, Nov. 18 1957, 24

like gods who agreed to incarnate on earth about 25 million years ago.⁶¹⁰ The second root race, or the Hyperboreans, were sexless, spiritually-advanced creatures. The Third Root Race became the first modern humans in a physical sense—including their need to sexually reproduce. According to Blavatsky's scheme, gradually spirit meshed with matter, becoming evil; matter then had to gradually return to spirit—this process worked out not only on the species level, but on the individual level through reincarnation.⁶¹¹ Blavatsky taught that the current dwellers on the Earth are members of the Fifth Root Race.

Storm depended on this master narrative while adding her own notions about Tesla, flying saucers, and other technology. Storm insisted, for example, that the First Root Race came to earth some 70,000 years ago in a "natural spaceship" and settled near the Grand Tetons. Some of their technology, she alleged, is still hidden in caverns in the Tetons and guarded by U.S. Army officials. Like Blavatsky, Storm dated 'the Fall of Man' to the Third Root Race. Storm argued, however, that the Fall was not merely a result of spirit fully meshing with matter. She insisted it was because the harmonious Third Root Race, or the Lemurians, had responded to a cosmic call to care for the diseased souls of the galaxy.

⁶¹⁰ Bruce F. Campbell, Ancient Wisdom Revived: A History of the Theosophical Movement (Berkeley: University of California Press, 1980.)

⁶¹¹ Campbell, 61-65.

Strategically shifting her fringe position to the center, Storm cast the current incarnations of these diseased souls as defenders of the 1950s status quo. Our planet, she argued, had been spoiled by the "laggards...the spoilsports, the screwballs, the odd balls, the sad sacks...a whole assortment of wet blankets in a wide variety of sizes, shapes, and shades. They are the ones with the souped-up egos; they do not buy the idea of spaceships, music of the spheres or the singing of angels."⁶¹² These beings had "skipped so many classes in evolution that they could not hope to catch up."⁶¹³ Though the Lemurians of the Third Root Race believed they could cure these diseased souls, they were sadly mistaken. Accepting them on Earth as they would patients to a hospital proved tragic. The laggards slowly polluted the spiritual atmosphere. The fight against them continued through the Fourth Root Race—that of the Atlanteans, whose continent eventually submerged after they succumbed to their own black magic. Storm relates that the rise of the laggards, "in brief, is the story of the Fall of Man."⁶¹⁴

But this was not the end. Storm informed her readers that a member of the universe's Hierarchy or ruling panel, Sanat Kumara, vowed to save the Earth. He left his own enlightened home base of Venus and shifted operations to Earth to help redeem its inhabitants. The struggle had been long and hard, with the forces of good pitted against those of evil—a scenario familiar to those enduring the

⁶¹² Margaret Storm, Return of the Dove (Baltimore: the author, 1959), 2.

⁶¹³ Storm, 6.

⁶¹⁴ Storm, 12.

propaganda of World War II and the Cold War. Storm believed that, as of 1957, the tides had shifted. "The interior of the globe has been cleansed."⁶¹⁵ For some esoteric reason, the axis of the Earth was also successfully shifted to a new angle. Likewise, flying saucers had been bombarding the atmosphere with cleansing energies. Hosts of angels were returning from exile, and the "dove" of peace was returning with "its joyous message." Perhaps mixing up her Theosophical units of 14,000 years with the 2,000 year cycles of astrology, Storm skipped over the Sixth Root Race and announced that the Aquarian Age, or the New Age, the time of the seventh ray, was now underway, when the earth could be transformed from a "Dark Star" to a place of joy.

Storm linked the dove of peace not only to Noah's dove flying with its olive branch over the flood-cleansed Earth, but also to Tesla and his love of pigeons. In so doing, she managed to transform what many considered a pathetic pastime of the inventor's declining years into a heroic effort. Investigators opening Tesla's stored trunks upon his death in 1943, for example, complained that several trunks, rather than being filled with notes for brilliant inventions, contained newspaper clippings and birdseed. Tesla fans have long sought to make sense of the inventor's love of pigeons. Tesla's first biographer, John O'Neill, reported that Tesla, a celibate, confessed that the great love of his life was a pigeon. He tenderly cared for this pigeon when it was ill, using electro-therapy

⁶¹⁵ Storm, 14.

devices. Prior to the pigeon's death, she flew from the darkness into his dark hotel room and beamed intense, loving light at him. To Tesla, the dove was femininity incarnate, a substitute for all the earthly women he had avoided to maintain his peak creativity. Even O'Neill, ever the Tesla booster, who referred to the inventor often in his biography as a "superman," confessed this was rather pathetic. He saw Tesla's efforts at turning himself into a "self-made superman, invented and designed specifically to perform wonders," as coming at a psychological cost. In Freudian terms, O'Neill believed that Tesla's suppressed sexuality, emerged in his "abnormal" love for the pigeon. Yet at the close of the book he offered a mystical version of the tale, commenting that the incident of the pigeon flying into Tesla's dark hotel room and lighting it up with a brilliant light was the sort of phenomenon of which "the mysteries of religion were built."⁶¹⁶ He saw Tesla as a doubly-tragic figure, one who had suppressed his sexuality and so subverted "normalcy" with his effort to make himself a "superman," and one who also suppressed his "mysticism" and so failed to understand, in the biography's closing words, "the symbolism of the Dove."⁶¹⁷

Storm had no difficulty understanding the symbolism of the Dove, nor trouble accepting that Tesla had come "from the mystical realm of the gods." Storm explained that the Dove symbolized peace and a New Age, and was Tesla's "Twin Ray," another enlightened soul and partner in his redemptive work. When

⁶¹⁶ O'Neill, 302.

the pigeon died, Tesla knew he hadn't much longer to live either. But like Tesla, his twin ray, having ascended, was now doing scientific work in the mystic realm of Shambala.

Tesla was central to Storm's critique of the Cold War arms race. Throughout Return of the Dove, Storm relied on Tesla as a symbol of the enlightened scientist to critique the male-controlled military and scientific establishment of the 1950s. For example, she blamed the strontium-poisoning of the soil from nuclear tests and nuclear weapons production on scientists who were laggard souls, men "dedicated to deeds of violence."⁶¹⁸ The rhetoric of her critique implied a subdued feminist perspective; if not an outright rebel who found laughable the cultural currents of the 1950s encouraging women to return to domesticity, Storm was able to turn that domestic perspective to her advantage, as she argued that the male dominated sciences came from an unbalanced and violent perspective. The atomic scientist, a rapacious breed in Storm's estimation, "seeks to enslave the atom, just as he has enslaved his own atoms that he lives with each day...He wants to split the atom; to tear it apart by brute force; to strip it bare as one would strip the skin from an orange. His way is the way of fear."⁶¹⁹ Once America's leaders turned from utopian scientists like Tesla to laggard

⁶¹⁷ Ibid.

⁶¹⁸ Storm, 22.

⁶¹⁹ Ibid.

scientists like this one, they had no one but themselves to blame for the current weakness in scientific education.

Storm mirrored the concerns of the mass culture critics and Beat writers of the age when she described the average citizen of the 1950s. Mass culture critiques included numerous literary critiques of homogenized culture as well as the neo-Marxist critiques of the Frankfurt School. The Frankfurt School writers, such as Theodor Adorno and Herbert Marcuse, argued that advanced capitalism engendered a culture industry that shaped mass tastes, adding to the conformist and virtually totalitarian dimensions of consumer society. Employing a different vocabulary, Storm described the symptoms of the Fall of Man in the 1950s as including an America full of bored juveniles "going delinquent," asylums full of the overstressed, and a populace subjected to a war machine draining wealth, controlling minds and sowing fear.⁶²⁰ She explained that the "average citizen...will just sit and sit and sit and watch television, or given a chance he will talk and talk and talk. He may appear to be talking about the state of the world...Actually he is expressing the confused state of his own consciousness... his own troubled heart...his vibratory note is always the same doleful moan—the note of crucifixion."⁶²¹ Agents of the cosmic Hierarchy were hard at work trying to awaken the average citizen from this slumbering crucifixion. But it was difficult to lift oneself from the false consciousness perpetuated by the education

⁶²⁰ Storm, 263.

system, religion, the media, prisons, and mental institutions. Storm primarily blamed the military powers that "refused to reveal to the public the truth about flying saucers" and the help the saucers represented.

At times Storm became enmeshed in the nationalistic mentality of Cold War America that her unorthodox perspective often helped her evade. Historians such as Elaine Tyler May have described the 1950s as the time of "containment culture"—whether that containment involved protection from political or sexual deviancy, or the muffling of feminist awareness. Storm's book offered a cosmic vision of containment—a spiritual national defense system. She scoffed that United States officials were not interested when Tesla offered them plans for his "anti-war machine." Tesla referred to this speculative defense weapon as his "death-beam" in the 1930s. The beam "would surround each country like an invisible Chinese wall, only a million times more impenetrable. It would make every nation impregnable against attack by airplanes or by large invading armies."⁶²²

According to Storm, even though the government seemed uninterested in this early version of "Star Wars,"⁶²³ and instead tried out the feeble radar alert systems or Distant Early Warning (DEW) lines, America was aided on a higher

⁶²¹ Storm, 57.

⁶²² Cheney, 144.

⁶²³ This lackluster interest has since changed to rabid enthusiasm. "Star Wars" now appears to be an idea which refuses to fade away; Edward Teller pushed his own version during the Reagan administration, and at the time of this writing George W. Bush was urging massive funding for his

plane of reality.⁶²⁴ In order to help defeat the dark forces pitted against America in World War II, the ascended master Saint Germain and his disciples "proceeded to mentally qualify energy and with it build a wall of light around North America," leaving out only Hawaii, as a sort of Achilles' Heel which eventually succumbed to attack.⁶²⁵

To a Theosophical point of view, science was an attempt to intellectually strip matter entirely from spirit; hence, restoring science and technology to spirit would be a redemptive act. Storm needed Tesla to fill the gap. Tesla, we learn from Storm, though a man of flesh and blood, did his creative work in the "fourth ether." Indeed, Tesla had often insisted that he had an uncanny imagination that allowed him to design and calibrate all his inventions without resorting to a drafting table.⁶²⁶ Storm explained that Tesla was able to do so by invoking the "fourth ether." He could even allow etheric versions of his machines to run in the ether for days or years, then "test the etheric machinery and make any necessary

own Star Wars defense system. Many Tesla enthusiasts see the master's fingerprints in the "top-secret" research today's visionaries are urging.

⁶²⁴ Storm, 211.

⁶²⁵ Storm, 156.

⁶²⁶ Charles Kettering, head of General Motors research laboratory in the early twentieth century, may have had Tesla in mind when he lampooned an eccentric inventor. This inventor came to Kettering with the design for a small, innovative dynamo, but when asked how the design could avoid overheating scolded, "what are your research laboratories for? I can't think of all the good things." See Charles Kettering and Allen Orth, The New Necessity (Baltimore: Williams and Wilkins Company, 1932), 57-8. Tesla had designed a "bladeless turbine" relying on fluid dynamics and patented it in 1913, but it was not put into immediate production because of the problem of over-heating. In 1920 he developed a gasoline powered model that he showed to various automobile manufacturers. See Cheney, Tesla, 109-15.

adjustments,"⁶²⁷ or "examine them for signs of wear."⁶²⁸ One wonders if another person having this ability could find some of Tesla's missing inventions still running in the fourth ether.

To Storm, the flying saucer was a prime example of the happy confluence of technology and spirituality, an ideal "vehicle" for a wonder show. If Tesla, on earth, could design in the ether, UFOs came directly from the ether. "That is why spaceships are described as being constructed without rivets, welding, seams, or cracks around doors. They are not constructed but precipitated direct from the ether."⁶²⁹ Tesla's ability to invent in the ether and then translate the etheric form into reality parallels the UFO lore which insists that government officials are secretly "reverse engineering" alien machinery recovered from crashes and so precipitating new technologies, ultimately, one would hope, for our betterment.

Storm's obsession with utopian technology led her to declare that Tesla's redemptive efforts would prevail against all countering trends. In refusing to back Tesla's energy broadcasting stations, J.P. Morgan, a representative of dark forces, preferred, as the Amalgamated Flying Saucer Clubs of America's Gabriel Green would say, the "vested interest in inefficiency." The ascended hero, however, had two major disciples who would succeed where the master had failed. Spiritual technology was soon to free the world from the errors of financiers and the "men

⁶²⁷ Storm, 90.

⁶²⁸ Storm, 107.

⁶²⁹ Storm, 113.

of violence" who tended atomic energy and nurtured the arms race. Tesla's disciples would fare better.

Free Energy and Free Enterprise

One such Tesla disciple was Storm's friend, Otis T. Carr, a wonder showman who promoted himself in the 1950s, often at flying saucer conventions, as Tesla's scientific heir. Convention-goers could marvel at a prototype of the OTC-XI, a flying saucer that he would soon make available to the public. Carr claimed to have received messages from Tesla and other space brothers to help him design his flying saucer, which ran on atmospheric energy, as well as other free-energy or "utronic" generators. In Return of the Dove, Storm hinted that Carr's innovations might even make Tesla's never-realized World System seem obsolete.

Storm regarded Carr as one of Tesla's two principal disciples, well-deserving of a place in her outline of cosmic history. The other disciple was Arthur H. Matthews, a Canadian electrical engineer, who had designed an interplanetary communication device a la Tesla and worked on developing Tesla's "anti-war" machine.⁶³⁰ Yet Storm placed her primary hope in Carr. The details of Carr's "discipleship" appear concocted from very slight material. During the

⁶³⁰ See Storm, 72.

1920s, while an art student, Carr had worked as a package clerk at the Hotel Pennsylvania in Manhattan. One day Tesla, a resident, "came straight to his young disciple" and requested that Carr purchase four pounds of unsalted peanuts.⁶³¹ Tesla fed these peanuts to pigeons with Carr's help. To anyone but Margaret Storm this work with pigeons would seem no great apprenticeship for a budding inventor. But Storm elevated this homely tale to the cosmic by assuring us the two were collaborating to help assure the return of the dove of peace. Carr ran errands, asked questions and soaked up the powerful vibrations of the master inventor.

Three decades later, Carr announced his amazing Tesla-influenced technologies: the "Carrotto gravity motor" and "Utron Electrical Accumulator." Showing a flair for paradox as well as showmanship, Carr explained that the Utron Electric Accumulator "is completely round and completely square and generates and regenerates electrical energy."⁶³² Storm wrote enthusiastically, in high occult rhetoric, about Carr's devices. The world wasn't ready for Tesla's world system in 1900 but surely would be ready for Carr's system with the advent of the New Age. Carr's flying saucers that relied on free energy could be ideal for transport within the earth's atmosphere, but "shattering" for those who tried to leave the earth if they weren't spiritually prepared for "transmutation" to the etheric realm. Carr's "free energy" devices could also create a utopian revolution.

⁶³¹ Storm, 73.

⁶³² Paris Flammonde, The Age of Flying Saucers: Notes on a Projected History of Unidentified Flying Objects (New York: Hawthorne Books, 1971), 128.

Storm wrote with approval of the coming transition to clean, free energy. "Very soon now will come the big planetary housecleaning. Then down will come all the cables, conduits, wires and posts, which the public is now paying to have installed. What fools these mortals be."⁶³³

Although Tesla had once happily announced that his new energy distribution system would abolish power monopolies, Carr's own publicity, in the age of un-American activities, downplayed the economic repercussions of his utopian inventions. He insisted his devices would stimulate productivity and sales and enhance American capitalism. Furthermore, OTC enterprises would only design prototypes of anti-gravity flying saucers and free-energy devices. He would encourage manufacturers all over the globe to put these inventions into production. Carr insisted that his "primary interest...is the opportunity of all industry the world over, to have an ownership with us in our business."⁶³⁴ The flier betrayed its crank roots with its conclusion: "The best way to get the total concept of what his free-energy devices mean to the world, is to suppose that the wheel were just now being discovered—then consider that OTC Enterprises is putting the wheel into the air...in an entirely new dimension. This should be

⁶³³ Storm, 131.

⁶³⁴ Otis T. Carr advertisement for "Peaceful Atomic Energy," 1958. Swezey Collection, National Museum of American History (NMAH), Archives Center.

pretty good for industry."⁶³⁵ He placed a hefty price tag on his flying saucers, \$20 million for the first prototypes, and \$4 million for subsequent models.⁶³⁶

Carr and his associates cultivated an audience for their wonder show, from a public excited by Sputnik, American space shots, and numerous sightings of UFOs. He was able to plug his enterprises on air when he was interviewed on New York City radio station WOR by announcer Long John Nebel, who had also interviewed contactees George Van Tassell and Howard Menger on his popular all-night talk show. Carr and his associates also helped produce at least one flying saucer convention in California and at it prominently displayed models of their imaginative products, such as the OTC-X1.⁶³⁷ Such tactics gained Carr investors. A brochure advertising his grandiose "Free Energy" research station in Maryland included a sketch of the buildings and grounds and text that explained the station's goals of developing spaceships, interplanetary communication technology and solar energy devices. The promotional brochure indicated that the interior of its domed building would be decorated by Salvador Dali to represent Ezekiel's vision of the fiery chariot. Likewise a white dove and four cherubim would surround this central grouping.

Storm's relationship with Carr was clearly close. In fact, she shared a business address with him. The same Baltimore street address that appeared on

⁶³⁵Otis T. Carr advertisement, 1958. NMAH.

⁶³⁶Flammonde, 129.

⁶³⁷Draper, 37.

her self-published book also appeared as the address for Carr's dubious flying saucer and free energy device business. One writer indicated that these headquarters, though modest, “featured numerous rooms and apparently housed various departments and in general suggested a successful operation.”⁶³⁸ One possible, though doubtful, explanation for Storm's book is that it was little more than a publicity stunt for Carr, who was bilking investors in his business schemes. Margaret Storm, however, seems an unlikely partner in crime. Return of the Dove is far too elaborate a text to have simply been prompted by an impulse to sucker the public. It seems more likely that she believed in Carr's inventions. This would be a natural extension of her belief that a new millennium was dawning, and her acceptance of the Theosophical notion that the past civilizations of Lemuria and Atlantis had been scientifically advanced.⁶³⁹

Though ambitious, Carr's enterprises did not fare well. In 1959, he put out a press release announcing a cancellation of the demonstration flight of a prototype flying saucer, the OTC-X1 arranged to take place at Frontier City

⁶³⁸ Flammonde, 129.

⁶³⁹ The ambiguities of Storm's narrative were deepened to Nabokovian levels in 1972, when the other Tesla disciple that Storm ballyhoed, Canadian electrical engineer Arthur Matthews, published his own volume, Wall of Light: Nikola Tesla and the Venusian Space Ship, the X-12 (Mokelumne Hill, CA: Health Research). Matthews insisted that his exhibition of his "Tesla-scope" in 1956 single-handedly sparked the renewed interest in the inventor—entirely ignoring the efforts of Kenneth Swezey and other Tesla Society organizers to mark the centennial celebration of Tesla's birth. Matthews also insisted he co-wrote Storm's 1959 book Return of the Dove, and, even more curiously, he included the frontispiece portraits of Margaret Storm and John Storm that appeared in Return, but put his own name beneath that of the "John Storm" portrait. The extravagance of his claims make him an even more unreliable narrator than Storm; likewise, his prose lacked the wit of Storm's volume, suggesting that he had, at best, been her collaborator. At the very least, this was a very incestuous community.

amusement park near Oklahoma City. While Long John Nebel, his assistants and various investors gathered to watch the launch, Carr took to his sickbed. The need for "further testing and refinement"⁶⁴⁰ delayed the launch, which never materialized. In the spring of 1959, one of Carr's business backers approached the Securities and Exchange Commission and Carr was fined and issued an injunction to end OTC's business enterprises.⁶⁴¹ A year later the state attorney in Maryland considered pressing charges against him for defrauding investors.⁶⁴² Sources disagree, but he also likely served a prison sentence.⁶⁴³

However bogus his enterprises, Carr's vision prefigured that of the alternative energy movement of the 1970s and the present-day free energy movement. As Carr put it, in verse form: "When you fight Nature,/Nature *always* fights back./If we try to share Nature's energy/by injuring Nature, we will only/injure ourselves accordingly...Crack or split the Atom and you/get frightful devastation...There is only one right way./The right way is the peaceful way."⁶⁴⁴

⁶⁴⁰ OTC Enterprises Inc. "Space-O-Gram." April, 1959. Swezey Collection. NMAH.

⁶⁴¹ Flammonde, 131.

⁶⁴² Clipping. 12 August, 1960. Swezey Collection, NMAH.

⁶⁴³ Jacobs, 125.

⁶⁴⁴ Otis T. Carr advertisement, 1958, Swezey Papers, NMAH.

A New Sisterhood of Reforms

The flying saucer movement relied on pamphlets and conventions to present their unorthodox "theatrics of space." They offered a homely script that made the universe into a stern judge of the Cold War culture then threatening human life on the planet. According to this script, handsome visitors from the stars in miracle-fabric outfits were stepping from aerodynamic vehicles to warn a chosen few of the dangers and infantilism of western culture. When governments like the USSR and the United States were making the most of their first fumbling steps into space, sending dogs and monkeys into orbit, the chosen few were speeding around the cosmos, guests of benevolent aliens light-years ahead of earthlings in technology and spiritual evolution. This script allowed a fringe group, America's occultists, to present themselves as a vanguard in their lectures, pamphlets, and radio and convention appearances.

This weighty task makes efforts like Storm's book seem both absurd and poignant. Clearly a fringe publication, down to the decision to print it with green ink, Return of the Dove nevertheless offered readers a sharp critique of 1950s America with its docile yet terrorized public. The book directly criticized the Cold War arms race and establishment science. And at times Storm's rhetoric made plausible her case that her fringe point of view was saner than that of the sober-minded "laggards" who then ruled public opinion and the nation.

Storm's elaborate interweaving of Tesla with UFO lore helped pattern her protest against the 1950s status quo. For Storm, Tesla, with his Venusian origins was a symbol of science that balanced rationality and idealism. Contactees amplified this vision with their narratives in which the Space People urged humanity to reject nuclear arms development and aggression. Storm's and the contactees' allegiance was not to nationalist governments but to Platonic realms ruled by universal parliaments and councils of higher beings. Their ultimate goal was that of spiritual progress. To this end they highlighted the flying saucer as a new form of the technological sublime. However sincere or insincere in intent, they offered a religious vision unique to the 1950—one that blended occult lore with populuxe visions of the future now.

An article in Harper's from 1960 that profiled a flying saucer convention indicated the grander ambitions of the "Movement," hinted at in candidate Gabriel Green's political campaigns. With some amusement, the writer argued that the invocation of Space Brothers gave this community authority on all matters metaphysical and made them naturals to unite the era's reform movements, which included "Health Food Discoverers, the more imaginative Fundamentalist sects, Yoga...[and] spiritualism." Hal Draper, the author, added "There would be room too for devotees of Dianetics, Astral Bodies, Hieronymus machines, and 'Shaverism.'"⁶⁴⁵

⁶⁴⁵ Draper, 40.

Despite the inevitable condescension, this commentator was astute to recognize that America's reformist fringe of the 1950s had grander ambitions. Members of the 1950s Movement shared the sort of cosmic optimism found in America prior to the Civil War, when a "sisterhood of reform" causes such as abolition, temperance, feminism, dietary reform, clothing reform and free love became forces for historical change—even though mainstream society then dismissed vocalizations of such reform goals as rumblings from the lunatic fringe. Historian Robert Abzug has argued that these antebellum reform movements were efforts, after the fall of the classical Protestant vision, to restore the "sacred canopy," that is, to remake a "cosmos," a universe with orderly workings and meaning, at a time of religious doubt, pluralism, and wrenching social change.⁶⁴⁶

Members of the flying saucer community, though having no weighty intellectuals among them like the writers of the Transcendentalist movement or even the evangelical leaders of the Second Great Awakening, shared the cosmic optimism of the earlier reform period. They relied instead on a folkloric wonder show script with roots in science fiction and occult literature and culture.

The folk challenge that the "Movement" made to the Cold War status quo has since become more mainstream. After incorporating the 1960s counterculture's fascination with Eastern mysticism, the environmentalist awakenings of the 1960s and 1970s, as well as the accompanying movements for

⁶⁴⁶ Robert Abzug, Cosmos Crumbling (New York: Oxford University Press, 1994). The concept

natural foods and healing, the saucer and occultist "Movement" of the 1950s evolved into the "New Age" movement of the turn of the twenty-first century. At the heart of the New Age movement remained a critique of materialism and technology, coupled with an interest in ecology, spirituality, health, diet, utopian technology and, as in the widespread interest in 'angels' during the AIDS crisis of the 1980s, millennial hopes of redemption through otherworldly agency. Partially because of its consumerist appeal to the good life, the New Age also built up a solidly-middle-class base and no longer lurked on the lunatic fringe as it did in the 1950s. Just as earlier wonder showmen offered evidence of miraculous technology and miracles of human capabilities, this enlarged "Movement" continued to embody the hope that the reconciliation of technology and spirituality would create a utopian order, so maintaining a vision formerly consigned to fringe thinkers and the promoters of wonder shows.

of the "sacred canopy" derives from the writings of sociologist Peter Berger, cited above.

Chapter Eight: The Many Gospels

In 1999, performer Austin Richards, a.k.a. "Dr. MegaVolt," delighted the crowd at the tribal "Burning Man" arts celebration in the Nevada desert, when he danced around in a metal suit and helmet on a flatbed truck between two large, humming Tesla coils which discharged ozone and bolts of electricity. In that same year, evangelist Dean Ortner, heir to Irwin Moon, appeared on "Ripley's Believe It Or Not," and performed his "million volt man" demonstration, jumping on a transformer and letting the crowd see a stick of wood in his hands burst into flames. That same year inventor Dennis Lee conducted a nation-wide tour in which he lectured and touted his free-energy machine claims, while another part-time inventor, David Olszewski appeared at New Age and dousters' conventions to sell his light therapy devices. The performances of these showmen and salesman make it clear that the wonder show, in its grassroots form, is still going strong today.⁶⁴⁷

⁶⁴⁷ I mean to distinguish the "grassroots" from such mass culture forms that tap fringe science such as tabloid newspapers, tabloid television, and the many Hollywood movies and television shows that explore the paranormal.

This chapter brings the wonder show formula to the twenty-first century. It will present the Whole Life Expo as the modern progeny of nineteenth-century reform forums, as well as the realization of the reformist agenda of the 1950s flying saucer “Movement.” The New Age exposition's backdrop of progressive hopes and apparent miracles make an ideal setting for a modern wonder showman such as David Olszewski. Likewise, to explore the fundamentalist Christian community, no longer pushed to the outer fringes but often front and center in today's political discourse, the chapter will include a meeting with Dean Ortner, who runs the "Wonders of Science" show, a descendent of Irwin Moon's "Sermons from Science"; further, the chapter will take a firsthand look at one of inventor Dennis Lee's wonder sales shows and consider the implications of the wonder show format and its long run in American public life. In the process, the chapter will revisit the long-running debate about the dangers and possible value of the American public's taste for pseudo-science, the otherworldly, and the technological fix and note how magicians and “skeptics” continue to serve as guard-dogs for the rationalist worldview.

Atlantis Rising

A banner hanging above a Dallas Convention Center hall in September 2001 announced, somewhat blandly:

Whole Life Welcome
to the Nation's Premier Event for
Natural Health
Personal Growth
Sustainable Living

The Dallas 2001 show opened only ten days after the plane crashes that destroyed the World Trade Center towers in New York City. Many of the key speakers had cancelled their appearances, and the exposition's organizers decided to donate all proceeds to recovery efforts in Manhattan. If the cancelled lectures by high-profile New Age figures such as Marianne Williamson, Jean Houston, and John Bradshaw spoiled the revivalist atmosphere, the core of the Expo, a marketplace made up of exhibitors' booths, still reflected the diverse nature and cosmic optimism (and perhaps opportunism) of this reformist gathering.

The first Whole Life Expo was held in 1982 in San Francisco. Each year since, the exposition has traveled to different American cities, and roughly 12,000 people attend each conference. In 2001, about 100,000 customers attended eight separate expositions, and the Whole Life Expo website suggests two million

customers have attended its expositions since 1982.⁶⁴⁸ While these are not huge numbers compared to attendance figures for, say, all-star wrestling events, it still does suggest that the New Age mentality is no longer entirely a fringe affair.

The exhibitors in Dallas included the Green Mountain Energy Company, offering subscribers a wind-power alternative to the local power company, a local Honda dealer's display of the new fuel-efficient hybrid electric-gasoline cars, a local holistic book store's wares, and vendors of crystals, crystal singing bowls, health foods, vitamins, clothing, paintings, and beauty products. Exhibits also promoted occult teachings, and alternative healing systems ranging from high to low tech, while varied healers and psychics offered sessions to clients. The only element lacking to replicate what in the 1950s UFO contactee enthusiasts would have called "The Movement" were authors of contact narratives offering to autograph copies of their books detailing encounters with advanced Space Brothers⁶⁴⁹—yet the occultist formulations of that movement were amply reflected in the book store's offerings and at several of the booths.

After stepping beneath the welcoming banner, I wandered through the exhibition, trying to find wonder show workers and remnants of "The Movement." Vendors of vegetable juicers wearing headset microphones offered their spiels to groups waiting for free samples of tortilla soup and other

⁶⁴⁸ Personal interview with Greg Roberts, V.P. at Whole Life Expo, 9 October, 2001.

⁶⁴⁹ Contactees are to be found in abundance, however, at the Mutual UFO Network (MUFON) conferences.

concoctions. Sellers of vitamins and anti-aging potions also abounded, urging leaflets on passersby. Throughout the hall could be heard the solemn tones of "crystal singing bowls," which emitted single tones of different pitches when rubbed with a wand around their edges. The Crystal Tones company, based in Salt Lake City, marketed each of these bowls as an "advanced biosonic repatterning tool" that could be "used on chakra and meridian points" to help practitioners allow clients to "access alpha/delta states."⁶⁵⁰ An earlier, and perhaps more refined variant, the eighteenth-century glass harmonica, was played both by Benjamin Franklin to entertain and by Anton Mesmer during his healing sessions. The bowls, which cost \$179 and up, were selling briskly. No attendees were likely to be thrown by such advertising copy as "Back by popular demand THIRD EYE BOWL SPECIAL \$150."

A middle-aged man in a suit who sat at a table loaded with pamphlets asked browsers if they were familiar with the Urantia Book. A magazine and the many pamphlets he handed out included quotes from this work, first published in 1955, which outlines a complex cosmology that blends Christianity with the occult. The Urantians also have attempted to make their ideas less threatening to the mainstream in the free magazine they offer, The Jesusonian. The publication's occultist worldview is belied by its sophisticated typography and layout, its cosmological borrowings from Christianity, and its ample quotes from authors

⁶⁵⁰ Leaflet, "Crystal Tones" booth. Dallas Whole Life Exposition, September 21, 2001.

such as William Faulkner, Johann Wolfgang Goethe, George MacDonald, and the use of such classic artwork as Edward Munch's "The Scream" to illustrate an article titled "Is there a Hell?", and Dorothea Lange's photograph "Migrant Mother" to illustrate the article "Is there Evil and Suffering on the Heavenly Worlds?"⁶⁵¹

The Urantians offer an otherworldly explanation of the origins of The Urantia Book. Reportedly, it was sponsored "by a commission of twenty-four spiritual administrators acting in accordance with a mandate issued by high deity authorities (the Ancients of Days) directing that they do this on Urantia [Earth] in the year A.D. 1934."⁶⁵² The Urantia teachings have much in common with the Spiritualist teachings of the nineteenth century. They stress foremost that there is an afterlife. After death, most people will undergo a period of sleep, from which the soul will be resurrected, given a new body, and, as the person's soul and intellect develop, he or she will make way through the seven "universes." The process is likened to that of education: the universe is actually a university. After resurrection, for example, comes a period of "registration and orientation" when advancing souls become "mansion world students." When appropriate, the student advances to Stage 4, also named Constellation Headquarters, Morontia, The Local

⁶⁵¹ The Jesusionian, "Special Report." 1988.

⁶⁵² "The Urantia Book, a Description," Chicago: The Urantia Foundation. n.d. It would appear that the revelation preceded by two decades the publication of the Urantia Book in 1955.

Universe, or, simply, "the Home of Jesus."⁶⁵³ The student then moves onwards through the system of seven universes until he or she finally arrives at Paradise. Along the way, the student will have learned from and met angels and other lesser beings, including, in the local universe, animals known as "Spornagia [that] can be pictured if you were to combine the best traits of a horse, a dog, and a chimpanzee. These industrious animals are known for their expert gardening skills."⁶⁵⁴ The group's teachings place the Urantians in the "occult mainstream" that dates back to nineteenth-century Spiritualism and the founding of groups like the Theosophical Society in 1875, yet their Cold War origins place them firmly in the worldview of the flying saucer movement.

A more direct entry to the occult worldview that pervaded the 1950s movement was offered at the Transmission Meditation booth at the Whole Life Expo. There a sign welcomed visitors to join an ongoing meditation circle. According to their literature, the goal of Transmission Meditation is to "step down the great spiritual energies that continually stream into our planet."⁶⁵⁵ Those meditating then send these cosmic energies of Love and Brotherhood out into the world. This spreading out of "positive energy" appeared to be the thematic basis

⁶⁵³ The Jesusionian, 25.

⁶⁵⁴ *Ibid.*, 15.

⁶⁵⁵ "Transmission Meditation." [pamphlet.] Tara Center, North Hollywood. n.d. Although the word "energy" has quasi-scientific connotations, the New Age use does not have the precision one would associate with Newton's equations. Instead "energy" closely approximates the nineteenth-century notion of animal magnetism, mesmeric fluid, or life energy—the Chinese concept of "chi" is also often evoked in this context. Andrew Ross makes a careful analysis of the use of the

for many of the healing systems at the exposition—both those that relied on technology and those that shied away from technology to instead rely on folk healing, channeled forces, or metaphors of "attunement." To give one example, Burnell Lee Sesker, was a young man who offered a "Harmonic Body Tune Up" that involved the use of both tuning forks and the Australian aboriginal instrument, the didjeridoo. He explained that when a part of a client's body is "low energy" it will "deaden" vibrations from the tuning forks. Sesker will then treat those energy centers by striking tuning forks on crystals and then holding them near the body's energy centers. Finally he will summon deep rumbling tones from the didjeridoo to "ground" the client's energy. During one of these treatments, an elderly man handing out pamphlets that offered health guidelines for reducing the risk of cancer stood behind the didjeridoo player, looking vaguely discomforted at the spectacle of the healthy young man blowing the horn while circling a middle-aged female client.

My goal, however, was not to remain within the sphere of the "natural," but to search for wonder show operators offering unusual technology. Here, too, I met with quick success. Most of these technologies implied that the cosmic energy or vital fluid could indeed be produced and transmitted technologically. For example, "Magnetic Health Mats" were available from the "Cosmic Energy Corporation," based in Austin, Texas. Users can stand, sit, or lie down on these

concepts of "energy" and the "natural" in the New Age movement in his Strange Weather:

ribbed mats and their points are designed to activate accupressure points, while the magnets inlaid in the mat will "magnetise blood" and reduce pain, fatigue, arthritis, and so on. The cheerful representative for this product, who thought I was an inspector, said he and his relatives traveled to health shows in Europe and the United States depending "on how much money we want to make." Nearby, the Natural Life company of Minnesota sold a "Natural Energy Stimulator" that provided "acupuncture without needles!" Good for arthritis, migraines, carpal tunnel, menstrual cramps, TMJ, "neck, shoulder pain & more!" I confessed to one member of the salesforce that my neck was sore. He proceeded to touch this stimulator to my neck, producing static electric shocks on contact. After about two dozen of these shocks, I was cringing. But I did, indeed, feel some "tingling" and relief when he had finished. He invited me to lie down on a "Chi Energy" table when it was vacated. I watched a young woman lying there, with her heels on a machine that rocked her back and forth, and declined.

The Oxygen Research Institute of Mill Valley possibly offered the most bizarre and expensive technological products at the exposition. At the center of their table were several elegantly-designed contraptions that included two sidelong silver gas tanks, resting on a black square pediment, with a gold pyramid and spiral outlined above the tanks with wire. The woman attending the booth did not acknowledge me when I sat down but continued a hushed conversation with a

Culture, Science, and Technology in the Age of Limits (London: Verso, 1991), 15-74.

well-coiffed woman; occasionally I would hear the whispered words, "founder," "Ph.D.," then "incredible orgasm" or "bliss" and "so important." As this whispered, confidential exchange continued, it became clear I would have to exercise greater patience than I was capable of to have the technology explained. The saleswoman had a live one on the hook, and I was an obvious nibbler. The gadget with the tanks and pyramid was called a Life Energy Amplifier or a LEA Atlantis Highlife and its starting cost was \$2,150. A pamphlet explained the workings as follows: "Rare earth magnets excite an alchemy of noble gasses, gemstone powders and energetic remedies that are sealed inside the formula electrodes, emitting high chi Far Infrared (FIR) subtle energy."⁶⁵⁶ Different "formulas" could be blended to offer such emotions as Joy, Passion, Heart Opening, Peace, Bliss, Harmony, Balance, and Ecstasy. The prose mixed seemingly scientific principles with compounds more appropriate to an alchemist's laboratory; the audience is expected to assume that a smooth bridge has been built between the two systems so that the company's concoctions of ground up gems and Far Infrared "energy" will offer a new form of twenty-first century magic. The company also hawked a more easily identified device called the LEA Innersex System. This vibrator, when plated with 24-karat gold or platinum, cost \$4,200. The less expensive InnerQuest Turbo system, which was not gold or platinum-plated, cost only \$900. "Blisswear Far Infra Red Clothing"

⁶⁵⁶ "Oxybliss." (Pamphlet.) Oxygen Research Institute, LLC. Mill Valley, California., 2

was also available. The Blisswear tee-shirt, which included mineral particles that held the "FIR frequency" woven into the cotton, was a mere \$125. The shirts were said to increase circulation and metabolism, detox the body and increase alpha wave activity in the brain. Though I sat near all this equipment, I felt no noticeable change in mood or physical state. Likely, the LEA Atlantis Highlife on the table was not switched on. Presumably, no free sample sessions were in the offing. The hushed conversation continued, and I jumped up to continue the quest.

My hope of meeting a wonder showman was realized when I moved on to the booth of the Light Energy Company, based in Seattle, Washington. While Pam Olszewski read a Dick Francis thriller, her husband David Olszewski held forth on the various light-healing equipment that his company offered, some of which he had invented. One line included "full spectrum" lights that mimicked the sun's output, designed to combat Seasonal Affective Disorder (S.A.D.), or rainy-season depression common to the Northwest. These devices are now fairly mainstream. But Olszewski was clearly even more enthusiastic about the light-emitting diodes or (LEDs) he had designed.

Olszewski trained as an engineer. For some years he has been working as an information system manager for a petroleum company in the Seattle area. Although technically trained, in the 1960s he became interested in alternative health and "metaphysics," including "remote viewing" (clairvoyance) and other paranormal phenomena that could not be explained by science. During a

television broadcast of the Olympics in the 1960s, he noticed Soviet trainers treating injured athletes with lasers. Fascinated, he found ways to secure some of these devices and study them. In the 1970s, he began working with "soft lasers," then in the 1980s switched to light-emitting diodes (LEDs), more powerful versions of the single-wavelength red lights that now glow on most electronic products to indicate they are plugged in. Many inventors were working on similar devices, but Olszewski was able to secure patents in nine countries, including Japan and South Korea.

Olszewski is an enthusiastic salesman, and his gray eyes shone while he spoke with few pauses to those that gathered before his table. As he later told me, he had developed "a good spiel." While I sat at his booth, a woman joined us who admitted having a chronic neck injury. Several minutes further into his talk and description of his devices, a woman in a wheelchair came to the table, pushed by her partner. The LEDs, Olszewski told his growing audience, stimulated photo-receptor areas in damaged cells, which encouraged the production of proteins that could heal the damage.⁶⁵⁷ As proof of the likely efficacy of the LED devices, he handed out numerous clippings, including an article that explained that NASA was studying the use of such devices to hasten healing of injuries to astronauts in outer space.⁶⁵⁸ Another article focused on Harry Whelan, the physician at the

⁶⁵⁷ According to one article, the cytochromes inside mitochondria, when stimulated by light, encourage the mitochondria to produce more energy. Dan Drollette, "Can Light Hasten Healing in Space?" Biophotonics International. September/October 2000, 47.

⁶⁵⁸ *Ibid.*, 46-49.

Medical College of Wisconsin, Milwaukee, who was testing such devices for NASA. Whelan believed the LEDs helped heal wounds such as painful mouth ulcers caused by radiation and chemotherapy. His studies also indicated that such devices helped musculoskeletal injuries. A clipping from a scientific journal argued that while many researchers are skeptical of the "cure all" publicity surrounding earlier research with lasers, researchers had amassed "vast statistical material...proving that such a treatment has a positive effect."⁶⁵⁹

Although Olszewski tried to rein in his enthusiasm, he tended to slip into the "LED as cure all" category of promoter when warmed up. He suggested, for instance, that shining an LED's light on one's navel could purify the blood pumping through veins. And, after learning that the woman in the wheel chair did not have a severed spinal cord, he cautiously suggested that his LED units could help her. He clearly believed in LEDs and mentioned giving a small LED unit to a grandchild to teethe on. His general spiel—both that offered at his table and in a lecture later in the afternoon—included repeated references to the fact that if you have scraped skin off your hand, and treated the wound with LED light every two hours "you can see the skin grow back."

His lecture was on a small stage in a corner of the exhibition hall. He relied on a slide projector and slides, and a few samples of his equipment. He told

⁶⁵⁹ "NASA Shines a Healing Light on Wounds," *Houston Chronicle*, 8 February, 2001, 12. See also Tiina Karu, "Photobiology of Low-Power Laser effects," *Health Physics*, Vol. 56, no. 5. May, 1989. 702.

his small audience that LEDs speed up the healing rate five times. During the lecture, he also insisted "there's nothing in the body you can't heal up with one of these. This stuff really works. I mean nothing." He mentioned skin conditions like psoriasis, eye problems such as cataracts and glaucoma, osteo-arthritis, whiplash injuries, lower-back injuries, and wounds. He then looked up and added, "and oh, ladies, this light encourages the production of elastin and collagen. If you treat your skin you'll have no wrinkles." In another sales riff, he began to expand on the notion that LED treatment would "return cells to normal." He went on to ask, rhetorically, "what is cancer? A mutated cell. Then we need to get it to de-mutate. It returns cells to their normal state."

Olszewski also had for sale a "Thermo Therapy Unit" that involved a rectal probe that he recommended for boosting immune systems. Reminiscent of the "Fever Machine" that GE performers promoted in their "House of Magic" in 1933, this device creates a "false fever" in the body, and so stimulated the immune system and the production of white blood cells. He thought this useful for treatment of AIDS and also to help cancer patients recover from chemotherapy and radiation therapy. At this point in his lecture, he showed slides to contrast alpha brain wave patterns obtained during treatments, when healing was going on, and afterwards. These instruments, he said, shifted the waves to the healing pattern. He insisted that the rectal thermotherapy unit would shrink the prostate, rid one of hemorrhoids, stimulate the immune system, and clear up the skin.

"Every cancer clinic in the country, virtually, has similar units." At the conclusion of the lecture he directed people to his booth, and about half of the modest crowd, about twelve people, hurried to the booth to interrupt his wife's reading of Dick Francis.

Earlier, during the small command performance for myself and the two women, Olszewski had insisted that the LED could heal allergies, and linked this ability to the homeopathic theory of medicine. He said that he waved the light over his food in restaurants. If he also shone it on his hand, he said the light would excite the food molecules and bring their vibration "up to your own level so your body won't reject it." He added, "I sell a lot of lights in restaurants. People get curious when they see me with it." He also noted that the LED light did not have to be red, but that that wavelength seemed to have the most pronounced healing effects on humans, perhaps because the hemoglobin in the blood is also red. "If aliens had green blood we could switch the resonance frequency to green."

I asked if I could heal myself by getting close to the red light on my stereo.

"That's good," he said. "Nice try. But no. It's not nearly powerful enough. These here will penetrate the body two inches. And the other unit will penetrate eight inches."

The woman with the chronic neck injury seemed more interested in the devices than the woman in the wheelchair. She had been testing it on her neck

during his long talk. When she stopped holding the backscrubber-shaped unit with its eighteen red LEDs on her neck, she said, "I do feel a tingling." Olszewski said, "That's a sign of healing." They began to discuss prices and the negotiations concluded with him promising her the exposition discount if she were to contact him in the upcoming months on email.

When the other two customers had left and I explained my research, mentioning my earliest references were to travelling electrical healers, Olszewski was happy to continue to share his secrets. He said that although he did not have a horse and cart, he was probably a good modern analogue for some of the itinerant electrical healers of the nineteenth century. He said that for fifteen years he had been attending about twenty conventions a year (two a month), and restricted the venues to traditional health shows, alternative health shows and New Age fairs. He estimated that 40% of his sales were to healing practitioners. He would never do state fairs. "You could talk yourself hoarse there." He said that the four or five national conventions of dowzers were especially fruitful. "I look for people exploring new things." He insisted that at a dowser's convention he could sell products to 75% of his audience. He said conventions were far more valuable than print advertising or web pages, where there was a limit to what you could claim if you did not want the FDA causing troubles. "But you need someone speaking. A static exhibit won't interest anyone. Consider those two women I spoke to just now. Both of them are here with chronic health problems. They have probably

tried numerous therapies. But they are ready to try something new. They have to. And I have something for them." This was his first trip to Dallas. "We'll drop the pebble into the Dallas pool here and eventually we will start hearing from doctors."⁶⁶⁰

The Other Side of the World

A year before the Whole Life Expo, I had driven to an unassuming suburban house in Whittier, California, to talk to another grassroots wonder showman, Dean Ortner. During my Southern California visit I had hoped to meet Irwin Moon's elderly widow, Margaret Moon, in a nearby community. However, she was recuperating from a hospital stay, her daughter was busy with work and Christmas preparations, and, as an outsider to the Christian fundamentalist community, I remained somewhat suspect. Her son-in-law had asked me, "What's your background?" and I had answered, intuiting that the cause was already lost, "My background is that I'm a historian and I want to learn more about Irwin Moon." It had not played well.

Dean Ortner, however, was happy to speak. He was a healthy-looking middle-aged man, with bright eyes reminiscent both of Dave Olszewski and photographs of Charles Came. Ortner was continuing the tradition of Irwin Moon,

⁶⁶⁰ All David Olszewski quotes either from personal interview, or his lecture of Sunday,

and George Speake after him, of performing science shows that pointed to the reality of the religious life; for more than two decades he had traveled year round performing, but now he was teaching science full-time at a Christian Academy and performing on weekends and during summers at schools, military bases, and theaters.

Ortner began as an assistant to the Moody Science Institute's George Speake in the 1970s, and started performing the Sermons from Science at the Moody Pavilion at the Spokane World's Fair of 1974. Before his conversion to evangelicalism, Ortner was doing graduate work and teaching at North Dakota State University in the area of bio-nucleonics, a field which he explained involved using radioactive isotopes to study life systems. His research was focused on finding a biodegradable plant extract to replace DDT. At that time he was a die-hard evolutionist. His parents had been professors, and religion had been an intellectual affair while growing up.

However, he attended one of Billy Graham's crusades in Fargo in 1969, choosing a seat in the back row so "nothing strange would happen to me." That night, when actor and evangelist Lane Adams was preaching, Ortner felt his words were "directed right to me. I gave my heart to God and this changed my whole life."⁶¹ He "accepted the lord" and decided to become a missionary. This, he thought, would mean traveling to the "other side of the world." He received a

September 23, 2001 at the Dallas Whole Life Expo.

scholarship to Moody Bible Institute, which was then eager and "praying for a scientist to come and carry on the live science program." He joined the staff at the Moody Institute of Science that same spring and toured with Speake for a few months. They then performed for six months at the Spokane World's Fair in 1974. They alternated films and live performances throughout the day. After Ortner performed, as is common in theatrical rehearsals, Speake would give him notes critiquing his performance, to help him learn how to handle the crowds, deal with hecklers, and to offer better phrases and arguments.

Despite his deep-set Christian convictions, Ortner was aware that the current temperament require him to show sensitivity to the fact that America is a "mixed society." He admitted that his school audiences can be "peppered" with Jewish people, Muslims, Catholics, and agnostics. Sometimes people would come to "disrupt the program" or came "trying to set you up," but they usually left "making positive comments." He nodded to pluralism somewhat grudgingly, and offered an anecdote in which a "Jewish woman" at one school had protested his performance at school board meetings. He had learned to keep religion out of the day-time demonstrations. At schools he would offer an entertaining show and invite the audience to evening shows in a theater where he could evangelize. After years of performing he could sense an audience and be sensitive to "where they are at." He still remembered his pre-evangelical days when he hated being tricked

⁶⁶¹ Personal interview with Dean Ortner. 15 December, 2000.

into lectures that turned into preaching sessions, so he attempted to be intellectually honest.

Sermons from Science had changed its name to Wonders of Science. After Ortner had been touring with Sermons from Science for thirty years, the Moody Bible Institute phased out the program. Now he was touring with Wonders of Science only during summers. It was a one-man show. His truck pulled a six by twelve foot trailer loaded with his equipment, which took about a day to set up. He gave a series of four two-hour performances. As with the original Moon blueprint, his lectures were on "light and color," "sense perception and laws of Nature," "recording devices," and the "million volt demonstration."

He has added some new demonstrations. For example, he now had a pair of goggles that make the wearer view the world upside down and backwards. At schools, he would invite a star athlete to the stage, who then would put on the goggles and be unable to catch a slowly tossed beach ball. He had another favorite with children when he would "freeze his shadow" on a light-sensitive screen of phosphor and then "walk away from his shadow." The audiences he has performed before have been as large as 20,000 in downtown Detroit, and as small as six technicians at a remote radar site in northern California. Like Moon before him, Ortner often has lectured at military academies and bases under the guise of the military's "Character Guidance Programs." At such forums his audience would cover a broad spectrum intellectually, and in terms of faith. But they were "out in

the middle of the nowhere" and appreciated the entertainment. His job, he believed, was to remind them that "humans are not educated beefsteaks" but have a "spiritual dimension." Volunteers sometimes helped him at each site to unload the equipment. He often put in 14 to 16 hour days and comments that you "have to be called" to do work like he has done. He also said he has not had a cold since he began the work.

Ortner was featured on the "Ripley's Believe It or Not" television show on January 12, 1999, performing his million volt demonstration. He favors the variant in which he jumps on the transformer, barefoot, holding a piece of wood that bursts into flames while sparks crackle about his body and loud sound effects similar to those of the rocket ships on an early Flash Gordon serial episode wash over the audience. His updated posters and pamphlets continued the strategies of earlier Sermons from Science performers. One pamphlet asked, "Does Science Make You Yawn?", and it went on to insist that science should be exciting. It mentioned how the show featured "a cry that can shatter glass," "metal rings that defy gravity," "a tour of the universe with animated laser images," "a frozen shadow," and "liquid light."

In performances he has avoided the creation-evolution controversy, stating that it is better "to stay away from divisive issues." Instead he tries to prove that there is a "personality behind the scientific phenomena they see....they can recognize the Creator from the fingerprints." His own thinking about evolution

has changed. In his scientist days he was a convinced Darwinian. After his conversion, he adopted the modernist Christian perspective that evolution was a God-guided process. Eventually he came around to fundamentalist thinking, though, and now could insist that evolution had its theoretical problems. He pointed to the many "gaps" in the evolutionary record. He insisted, however, that DNA is one of God's creations, and even accepted the process of mutation, yet he stated that God must put "complexity" into the system, and he argued that complex systems like the human eye or the mitochondria could not have gradually evolved.

Like Moon's *Sermons from Science*, Ortner's newer *Wonders of Science* shows stress that just as matter and energy follow natural law, humans are meant to follow divine law. One demonstration involved a spinning gyroscope inside a suitcase as a prop. He would invite a strong man to the stage who would then find he could not turn the suitcase around. The moral he draws from this is, "if you fight God's laws, they'll break you." Ortner also uses optical illusions and other devices to show that the human sensory apparatus is limited in its scope. If we can not trust our own senses, what can we trust? This line of argument was quite common to Spiritualist and occult circles at the turn of the century. Not only can we not trust our senses, but scientific instruments reveal that there are many unseen forces operating in the universe; together, these two premises made a persuasive case for the possibility of a spiritual realm.

Yet Ortner, as a fundamentalist, not surprisingly, had little patience for the New Age community or UFO enthusiasts. Though an avid reader of science fiction, he is also a school science teacher, and he said, "No Lone Ranger is coming to solve our problems from outer space." The failure of such efforts as S.E.T.I. suggest that the earth is "probably all alone." He has talked to people involved in "alien studies" and others who offered "abductee tales" but found them dubious. Like Christian critics of nineteenth-century Spiritualism, Ortner argued that Satan could bring in the illusion of alien presences to lead people down the wrong path. The "channeling" of spirits common to Spiritualism and new age psychics also disturbed him. To his point of view, this was a counterfeit that Satan brought to the world. Channelers might well be reaching spirits, but they might be fallen angels, not worthy of trust. The "ascended masters" of occult lore might just as well be demons in disguise. People who followed these promptings, Ortner argued, were mixed up and had become less open to the truth.

Before I left Ortner's house, he commented that most of the other science sermonizers who came in the wake of Moon lasted about "two and a half years" on the job. Such people simply "don't have the calling." After I had thanked him for the interview and prepared to leave he slipped me an evangelical tract, "The Roman Road," saying it would explain the message he tried to present in his demonstrations.

Welding with Water Gas, or, Fog Alarms in the Night

In October of 2001, inventor and entrepreneur Dennis Lee appeared in Austin, Texas, on stop forty-two of his fifty-state tour, in one of the sprawling white buildings of "Promiseland," a Pentecostal church lit up in shades of green and purple at night.⁶⁶² One truck in the parking lot had a hand-lettered sign: "Free Electricity? Ask Me." Although my V.I.P. pass, obtained on the internet, urged me to arrive twenty to forty minutes early, only about 150 people filled the red-cushioned pews which could seat about 250. Out in the lobby there was a check-in table that included forms to fill out for those interested in dealerships, black tee-shirts of Nikola Tesla for \$15, and \$20 copies of Lee's 1994 book, The Alternative—A True Story With Solutions to America's Most Pressing Problems. Its back jacket included the copy: "Fossil Fuels Are Polluting Our Planet," "We Are Overrun with Garbage and Toxic Waste," "The Media Is Manipulating We the People," "Courts No Longer Uphold Our Inalienable Rights," and the litany concluded with "But, What is the Alternative?" The alternative was Lee's hodge-podge of Yankee tinkering and magic. His show combined salesmanship with demonstrations of engines, generators, vacuums, and magnetism. Like a good wonder show worker he sought to astound his audience, to make them appreciate

the wonders of the universe, and to persuade them that normal science, big business, and government need not have the last word. As with his book, The Alternative, the focus of his pitch was ecological sanity combined with right-wing libertarian notions.

Dennis Lee, founder of Better World Technologies, and the International Tesla Electric Company, could be regarded as the 1990s and 2000s answer to Otis T. Carr of the 1950s. Though he did not promise flying saucer flights, like Carr, Lee does offer the miracle of free energy devices, and through this miracle, a vision of the world transformed. Like Carr, Lee has preyed financially on believers in the otherworldly, and sought credibility by associating his company with the aura of the deceased inventor Nikola Tesla.

Dennis Lee is significant not only as a modern wonder show operator but also as a member of a fringe science movement: the contemporary free energy movement dedicated to finding clean and virtually limitless energy sources. This movement had its roots in the utopian energy efforts of Tesla, and in the pitches of 1950s confidence men like Otis T. Carr; it also relates to the alternative energy interests that rose to prominence in the 1970s with the environmental and anti-nuclear movements.

Free energy proponents, however, gained an enormous boost in 1989 when University of Utah chemist Stanley Pons and his colleague Martin

⁶⁶² This description of Lee's show is based on the author's notes on Lee's October 22, 2001

Fleischmann arranged a dramatic press conference to report that they had developed an electrical method for achieving nuclear fusion reactions at room temperatures. They reported that with a simple apparatus enormous heat was released through minimal electrical input. Their equipment included four electrolysis cells with palladium electrodes immersed in heavy water.

When two reputable scientists announced that the millennium energy solution had arrived, the popular reaction was immense. With promised help from the Utah legislature, the University of Utah began plans for a multi-million dollar National Cold Fusion Institute.⁶⁶³ Thousands of scientists and enthusiasts began to tinker with their own tabletop fusion kits, which required very simple equipment. Early confirmations of cold fusion eventually led to new studies and retractions of many of the confirmations, as researchers refined methods for measuring the actual output of heat and radioactive particles and rays. Yet throughout the 1990s interest in free energy of the cold fusion variety continued to mount. Growing evidence from scientists that cold fusion was a chimera only encouraged the dedicated "cold fusioners" to assert that a conspiracy had developed to quash free energy.

The free energy movement includes engineers, inventors, and fringe scientists attempting to create utopian technologies. Such researchers exist largely

appearance at Promiseland in Austin, Texas.

⁶⁶³ John Huizenga, Cold Fusion: The Scientific Fiasco of the Century (Rochester, University of Rochester Press, 1992), 23.

outside the institutional framework of the scientific guilds. Though the American Physical Society still allows panels on cold fusion at its annual conferences, these scientists are somewhat stigmatized. As an alternative, the free energy researchers run their own conferences and have developed journals dedicated to their research, such as New Energy News, Infinite Energy Magazine and the Journal of New Energy. The Institute for New Energy (INE) also maintains a website that includes an enormous database of articles and correspondence concerning free energy. In such a way, these researchers have formed their own loose alliance of dedicated amateurs, disaffected scientists, engineers, futurists, and New Age thinkers.

Dennis Lee, on the huckster fringe of the movement, typifies some of the beliefs it promotes. Many of the INE postings reject the ruling paradigms of science and revel in questioning the principles of thermodynamics, while exploring anti-gravity devices, low-energy nuclear reactions and transmutation (i.e. cold fusion), and perpetual motion. Others insist, with some scientific basis, that the "ether" of earlier physics tallies with the quantum theory premise that space is not empty but contains quantum-level fluctuations that, free energy researchers maintain, can be harvested like wind or solar power. Many of the INE articles promote a rebellious attitude toward a sinister status quo that encompasses the political, scientific, and business establishments.

Borrowing from the free energy community, Dennis Lee also argues that “free energy” is possible, and that the transmutation of radioactive materials to inert materials is possible. Like many of the cold fusioners, he sees himself as something of a modern alchemist, bringing spirituality to technological research. Lee also relies on a conspiracy argument of the "if people are out to get me then I must be onto something" variety to boost his appeal. For publicity, Dennis Lee relies on a complex network that reaches into the free energy community, fundamentalist Christian church culture and rural libertarian circles with his websites and weekly web radio broadcasts.

Lee’s radio show, which began broadcasting in December, 2000, is titled "The John Galt Show." The pseudonym Galt is an homage to the hero of Ayn Rand's novel The Fountainhead, a symbol of individualism and of the libertarian ideals that Rand helped originate. Lee's broadcasts from "down on the farm" would generally appeal to rural, right-wing individuals, and to fundamentalist Christians. He notes that his company's president is "Jesus Christ," its treasurer is the Holy Spirit, while Dennis Lee is merely the Director of Research. His radio broadcasts have included such titles as: "God Doesn't Need Us to Make Free Energy;" "Free Electricity and 1.6 Million Witnesses;" "Government Interference;" "Partial Birth Abortions;" and "God's Involvement in Our Beginning." His target audience is also indicated by the network he belongs to, the "Truth Radio Network," which has the motto: "Not Necessarily Your

Mainstream Conservative & Christian Talk." In yet another bit of evidence that the far-right and far-left often meet, Truth Radio's web page includes the slogan, "Truth Radio tells the Truth behind the Dominant Media Propaganda."⁶⁶⁴ The actual broadcasts are rambling and numbing monologues that rely on vernacular humor and reports of conspiracies to stave off the monotony of his pitches for his company's products and promises that listeners that become franchised dealers will soon gain a fortune.

He is a far better performer live on stage than he is on radio. The stage for the Dennis Lee show at the church in Austin was filled with apparatus such as engines, a boiler rigged to run off of septic tank gas, a welding machine, a kitchen stove, a generator beneath a row of light bulbs, and posters for products such as his Fire Shaker and Sonic Bloom. Lying about were oddities that suggested Lee was a humorist, such as a cane with a bulbed bicycle horn attached. White sheets were pulled in triangular patterns behind all the apparatus. The audience was mainly middle-aged white people. Many of the men wore remarkably long beards and seemed quite serious. There were also a few people of color scattered about the pews. Many, like myself, held notebooks.

Lee came on stage and asked, "Are you ready to have fun tonight?" He was a big man, with a Fu-Manchu moustache, light sideburns, and an intense look

⁶⁶⁴ This home page also had contrasting advertisements for the "Million Mom March" against handguns and one for "Dangerous Books Online Bookstore," with a list that gives tips on how to open an offshore bank account, how to protect one's privacy, and travel internationally without a passport. Truth Radio homepage. 19 July, 2001. <http://www.truthradio.com/>

as he sized up his audience, trying to decide if he would have any hecklers or "trouble." He wore khaki pants, a tan shirt and a brown sports coat. He immediately asked the audience if he could remove his jacket, gained their assent and promised he would not take anything else off.

Lee seems comfortable on stage, capable of both physical and verbal comedy, he has a droll voice with a wheedling quality and he enjoys playing to his audience, frequently asking rhetorical questions like, "Does anyone remember Free Enterprise?" Bringing shouts of "Yep!" or "Sure do!" He began by noting that he would be telling us what we did not know, and "what it is we don't know in America will shock you." He complained about "Good Old Boy Politics" and corrupt Big Business. He informed the audience he had technology that could eradicate all forms of pollution in the United States. "What level of pollution is O.K. for the United States?" he asked. "None!" came the replies. He also said that at the end of the night he would make a job offer to everyone; at no cost to us we could earn more than our present salaries while working only part-time. "Anyone making less than \$100,000 a year out there?" he asked. This also drew laughs. He went on to admit that he was a controversial guy. He said that more information about him was available on the internet than on actor Tom Selleck, but it was not as flattering. He also let us know that his other forty-one performances of the 2001 tour had been in hotel rooms—not churches. He had no connection with Promiseland; however, he announced, "I am a Christian from the top of my head

to the bottom of my toes. That's who I am." He admitted this did not necessarily give one credibility in this day and age, yet he wanted it noted. The inventions he would reveal were the Lord's work.

He held up a small pedestal, noting it was the sort "a toy elephant might dance on." He set it down and spun a top on it. "Let's see how long that keeps spinning," he said. He then began talking of perpetual motion and how his critics and scientists ridiculed the notion. However, he pointed out that if there was a perpetual source of energy—a source available twenty-four hours a day—then perpetual motion would not be absurd. "Everyone in this room is sitting on the biggest mass known"—laughter ensued—"no I'm not insulting anyone—you're sitting on the Earth, which is moving 78,000 miles per hour. How does that make you feel? How long has it been moving? A long time. When will it stop? Not for a long time." Leaving us with this thought he went on to explain how he wanted to put a generator on each of our houses, as this "was a dream God gave to me." The machine would offer 100% of our heat, hot water, air-conditioning, and electricity. It would also put out fifteen times more than the needed wattage. That was why our energy would be free. He would sell the surplus to the local power company to make his money and let us use the rest for free. Pointing back to the top, which was still spinning, he said, "it's all in the wrist," and mimed the way you needed to spin one, again drawing laughs with his pantomime.

He then informed us that he could modify our cars to run on pickle juice. This led to a brief side-discussion of his company's "dietary aids," which he depended upon to keep his weight down; he held up a spoon with a hole in it to much laughter. He then had his two assistants, one of whom wore a trucker's cap, the other a black tee-shirt bearing the portrait of Nikola Tesla, on the stage to help him run a small "infernal combustion motor." He was going to prove that we could run the engine on anything as part of his pitch for the environmentally-friendly and economically-pleasing formula of 80% water and 20% gasoline.

He and his assistants began to produce samples of various household products, and Lee urged the audience to take sips or sniffs to authenticate them. Into a jar, after he or his assistants had a spectator taste or inspect them, they poured samples of Coca-Cola, water, "Hot as Hell" hot sauce, crude oil, Aqua-Velva, sugar, salt, pickle juice, Frappuccino—"anyone out there drink Frappuccino?," and urine, which he referred to as "technician's juice." This routine included many comic moments, as when an assistant bravely tasted the hot sauce, and had a delayed reaction as in a silent film.

Lee then told us with his modified engine, no pollution would be emitted from the exhaust pipe, and, in fact, the exhaust would be 97% oxygen and perfectly safe to breathe. They attached the jar of fuel to the apparatus, and after many pulls on the starter, and a few engine starts and sputters, they got the engine running and Lee held a white handkerchief before the exhaust, showed it was still

clean, then leaned down to breathe in the exhaust. He then extolled the engine and its modification with a mysterious "reactor rod." Scientists had been "astounded" by this rod, and nobody knew how it worked. Fiber optic photography of it at a laboratory showed that "a blue lightning storm" was going on while it worked.

He spoke of how these rods could be installed on a car, a complicated process of "tuning" while having it face magnetic north, and doing other seemingly magic adjustments. With a compass you would find the exact point on the reactor where the needle pointed north, and the exact point where the needle pointed south. You would then clip the reactor at those points, and let the engine run for a while, "burning it in." Then it could face any direction. With such modified engines, we could save enormously on fuel bills by using a water/gasoline mixture. He also attempted to demonstrate how a lawn mower could "run on its own exhaust," though he admitted that physicists would tell you this was "impossible." During this demonstration, as with the last, the lawnmower frequently stalled and Lee, the impatient showman, finally told his assistants, with some disgust, "take it away."

Lee continued, throughout the night, to rely more and more on what the early twentieth-century showman Walford Bodie, M.D. had referred to as "his showman's license" when it came to explaining his conjurations. Lee's next remarkable demonstration involved welding with "water gas" as the fuel. Water, as he pointed out, was an abundant power supply. Were there any welders in the

audience? Yes there were. Well, the people who sold acetylene "won't like me," he said. Though it took electrical energy to turn the water into a burnable gas, he said that producing the flame and using it cost a mere eighty-eight cents a kilowatt hour. The gas was not the mixture of hydrogen and oxygen one would expect from electrolysis but a mysterious "water gas" which does not explode but "implodes," and had the structure of H-O-H rather than the H-H-O that he incorrectly claimed was standard for water. Water gas also had the remarkable homeopathic quality of adjusting its temperature to melt whatever substance you were working with. One extreme would involve cutting tungsten metal which has a melting point of 13,000 degrees Fahrenheit, which, he informed us, was the temperature of the surface of the sun. But he could also safely pass his hand through the flame, or even hold the piece of metal being welded or cut. He said he discussed this with a scientist at Brigham Young University who said, "atomic reactions must be involved for no conduction of heat to occur." Water gas also left "no slag" on steel when cut, left water streaks on surfaces it cut, and could burn through any substance on this planet, including diamonds. He and his assistants proceeded to cut various pieces of metal and discuss the costs of using the "water gas" instead of acetylene. He informed us that steel workers who cut cables on bridges had purchased units so that they would not have dangerous tanks of acetylene up on the bridge—instead, they had harmless water tanks. The cost for

one of the welding units was approximately \$1200 but Lee would also be happy to sell the bottled gas as well.

His next demonstration involved the concept, popular in the cold fusion and free energy community, that the transmutation of radioactive elements to inert elements was possible through cold fusion processes. "The federal government," he told us, was putting our lives at risk. He described an above ground nuclear waste storage facility in Richland, Washington, with brine circulating to prevent spontaneous reactions, and how scientists were scrambling around to find salt mines to bury the waste in. This was all foolery, since Lee had "a machine to neutralize all radioactive waste into inert materials. We know they know that," he added, because he had demonstrated the device for two unnamed U.S. senators, one of whom responded favorably and was promptly voted out of office. Though scientists and the Department of Energy would disagree—"anyone from the Department of Energy here tonight? No? I always invite them"—it was possible to "transmutate" [sic] the nucleus of an atom. "The alchemists were right."

Lee then had an assistant mix up a control sample and a solution of one gram of radioactive thorium along with 125 grams of water and an undisclosed amount of hydrochloric acid. These would be placed in his "pure zirconium" cooker, with its electrodes, for thirty minutes. With a radioactive gauge they would test the sample before and after. Lee told us what to expect: a lowered radioactive count and traces of titanium and copper and other metals would be in

the solution—proof of transmutation of the thorium. Though the most likely explanation would involve contaminated samples or electrodes, Lee insisted that this was out of the question because the cooker was 99.9% pure zirconium.

While the sample "cooked," Lee went on to other demonstrations and spoke about the conspiracy of the power companies to rip off consumers with inefficient meters and appliances that drew more current than needed. It was all a result of the "Good Ole Boy Routine," the short script of which runs, "You lie, I'll swear to it." He then extolled the virtue of his company's numerous products, starting with a power regulator that would make sure machinery only drew the amount of energy needed and demonstrated the device on a small generator hooked to an array of light bulbs.

Many of his sales pitches for household products played on the audience's desire for security and trust. Earlier, he had made the audience uneasy about pollution, corporate conspiracies, and radioactive waste. Now he offered fire barrier sprays and a fire shaker that put out kitchen fires that could otherwise swiftly spread through a home. He also revealed the "Bandit" alarm system for homes or stores, which took three seconds to fill a room with thick fog, and "Miracle Shield," which was an anti-graffiti liquid, so eliciting the audience's fear of or distaste for fearsome teen gang members.

He spoke of numerous other products including his "noiseless Jackhammer," permanent magnets that could do the same work as laundry

detergent, and an enzyme soil remover that "cleans up the environment instead of polluting it." Those "little bugs," he told us, "ate all the oil they could find then cannibalized each other. Eventually you have only one giant bug left to battle." He then did some shadow-boxing, as if trying to knock-out a giant adversary, then grinned and said, "just kidding."

Following these and a number of other product plugs, he returned our attention to the "zirconium cooker" and the samples were extracted and found to have lowered radiation levels. He asked if anyone in the audience had access to a university laboratory where they could test the samples with a spectroscope. An elderly gentleman said he did, so Lee gave him the tubes and assured him the laboratory would find titanium, copper and other metal traces in the solution. The reason? Not because the "cooker" had traces of such elements, but instead because "We've transmuted [sic] the nucleus of the atoms." Miracles abounded.

Lee continued his theme of the insecurity of life in America, alluding to the terrorist attack on the World Trade Center in Manhattan that had taken place several weeks prior to his show. This was the one point in the lecture where his impeccable sense for what his audience would be willing to hear failed somewhat—a brief shudder seemed to greet the allusion. He soldiered on, though, and solemnly intoned that jet planes could use water as fuel. This had been demonstrated irrefutably. A "hydrogen pulse separator" would turn the water to hydrogen fuel (apparently preferable, in this case, to "water gas"). If a plane

loaded with fuel tanks of water ran into a tower, he asked, what would happen? "Far less damage." He then went on to describe an anti-explosive lining he had to offer. The airlines ought to line jet fuel tanks with it since it was explosions that killed people in crashes. A video showed a car gas tank on a field with a burning rag hanging out its top. The video narrator said, "It's still burning which shows there's fuel in the tank." We watched and it never exploded. "Remember back when you could have a spare tank of gas in the back of your truck. Well let's line one with this stuff. When a cop stops you and tells you it's illegal, put a handkerchief in it, light it with a match, and watch him run."

Lee then talked about how he had been harassed "like crazy" on his tour. He and his crew had been forced off the stage in Kentucky. They left only when police insisted his equipment would be impounded. But he told us, "you know what, when I finish my last performance of this fifty-state tour, in Washington, D.C., I'm going to get Federal Marshals and have them come with me down to Kentucky and you know what, I'm *going to do that show*." This led to applause and high five signs. "Because I'm an American!" he shouted, "and I know my free-speech rights!"

It was over three hours into his performance before he began his final pitch, for free energy. As no hecklers had challenged him, he suspected, correctly, the docile crowd was now ready to accept his more absurd pronouncements. He told us that he believed he had found a perpetual energy source—and it was the

magnet. "I believe," he said, "that energy flows into magnets." Most scientists, he admitted, would disagree. "They keep saying to me 'the magnet does no work, creates no motion.' A physicist told me this once. I said, 'O.K., I heard you, now hold up your arm.' He didn't want to. I said 'I listened to your explanation, now hold up your arm. He did. I began pushing on it. In order not to fall over he pushed back. I kept pushing. He was turning red. He was a little guy. I finally stopped and said to him, 'Well, there was no movement, did *you* do any work?'" The audience loved this anecdote which depicted Lee both outwitting a physicist and physically dominating a slight intellectual. When it came to pitting other scientific theories against Lee's persona, there similarly would be no contest. The magnet was a constant energy source. They did their work twenty-four hours a day. His "permanent magnet motor" was the coming thing. Free Energy was not available now, but soon we all would have units on our lawns.

He then did demonstrations with magnets to give "clues" as to how his motor worked. His first demonstration involved an unusual magnetic phenomenon well-known in the nineteenth century. He showed us a permanent magnet and a segment of wide copper pipe. He upended the pipe and set up a mirror so that a video camera could look down it. Then he had his assistant drop a magnet down the copper tube. The video screens showed it slowly falling, as it induced magnetic currents in the copper; it fell in what seemed slow motion. He then said that a stronger magnet would go even slower. We watched its slow, somewhat

magical free-fall through the short length of tube on the video screen. "My motor will use one hundred permanent magnets," he said.

To prove that magnets could do work in the sense that physicists mean, he brought out an apparatus with a narrow track to roll a golf ball down. On each side were long thin magnets. After rolling the golf ball down, he put a steel ball on the bottom and the magnets pulled it uphill. Then he placed the golf ball in front of the steel ball and it was pushed up the incline. "No work? Magnets do no work? How about that?" This led to cheers. At the front of the stage he earlier had set up a series of magnet-laden windmills. Spinning one caused the others to spin in a haphazard, chaotic way that Lee enjoyed; he gave personalities to these mills and their quirks, underlining his identification of the magnet as a trustworthy friend, a reliable source of unlimited power.

He then said he was not demonstrating his free energy motor this tour because in 1999 he had demonstrated it to all comers. "Remember my ad in USA Today? 'Tired of High Energy Bills? How about no Electric Bills?' Pretty low-key, huh?" During that tour he had "challenged every scientist, every engineer, every technical being" to find fault with his inventions. (Presumably he had ignored most of the debunking articles and websites that did just that.) Since the generator had been previously proven, he offered a glimpse of its abilities. He said his new motor would use batteries to put one volt of electricity in, the

permanent magnets would then "finesse" this energy to create six volts, five of which would be output, one a loss to entropy.

Using the magician's art of misdirection, he then switched the audience's attention from his miraculous but unseen "permanent magnet motor" to the generator that it would be attached to on our lawns, the "G-10." It "was the most efficient in the state of Texas and in the history of the world." The G-10 was brought on the stage. For the sake of demonstrating its efficiency his assistants hooked it to a small engine and a heater to draw power. He invited people from the audience to take readings on the input and output levels and see for themselves how efficient the generator was. About six men slowly descended to the wondrous generator. Unlike corporate manufacturers, concerned with built-in obsolescence, Lee's company wanted the G-10 to last a hundred years. He also assured us that the complete energy-producing unit would not make much noise on our lawn. It would make about the same noise as a heat pump or air-conditioning motor.

It was now close to 11:00 p.m. Lee's audience had been listening to him for four hours. They were willing to take on trust Lee's miracle free-energy machine and to instead examine the efficiency of the G-10 generator. They apparently had faith in his "permanent magnet motor" and interest in his other products, like the "noiseless jackhammer" and the welding unit that used "water gas." All that was left was to sell products and dealerships. The incentive for

takers would be personal wealth and a chance to help improve the environment. Some spectators might conclude that even if Lee was running a racket, he was a tireless front man who could help them sell products to others and so gain commissions.

I left worn down, able, almost, to believe in the miraculous. Lee seemed to me the embodiment of an American archetype, part salesman, part showman, part tinkerer, and part confidence trickster. Like the diabolical confidence man in Herman Melville's dark novel, Lee preyed on his audience's fears and insecurities—painting verbal pictures with video supplements of houses going up in flames, stores burglarized, jet planes exploding, terrorist attackers, and a variety of ecological disasters. He offered an "alternative"—miracles that had some technical grounding, surrounded by clouds of magic and double-talk. He seemed much like the "rainmakers" who plied their trade in dusty Kansas in the late nineteenth century, bringing strange equipment to small towns, gaining contracts that would cost the town nothing if no rain appeared, but varying fees for differing yields of rainfall; the rainmaker then would lock himself up in a house or at the top of a specially-constructed tower, set up his equipment and crank the "rain mill" to send mysterious chemicals into the skies—at times, to make it rain, at times to make it flood, at times to be run out of town, as had happened to Lee in Louisville, Kentucky.

Wonder Shows and the Pseudoscience Debate

Ortner, the evangelist, Lee the libertarian inventor with strong Christian convictions, and Okzewski, the light therapy inventor, all offer variants on the wonder show. Though the wonder show's roots can be traced back to the ancient past—these performers and their shows reveal a clear lineage to the nineteenth-century performers examined earlier in this work. Olszewski seems like a modern counterpart to Charles Came, who toured in the mid-nineteenth century. Both offered miraculous healing technology, magic lantern shows, and a therapeutic worldview.

Among these showpeople, as with performers in allied traditions such as the circus or the medicine show, traditions are handed down orally. When Charles Came retired after the Civil War, for example, his son-in-law took over the wonder show business and toured upstate New York for several more decades with Came's equipment. And when Irwin Moon gave up lecturing for filmmaking in the 1940s, he trained his son to perform *Sermons of Science*, then found another successor, George Speakes, who passed on the tradition to others, including Dean Ortner.

Ortner, Lee and Olszewski all had widely divergent worldviews but shared common ground. All three believed in "The Wonders of Science," and held the belief that technology and science were here to benefit humanity. Common to

these showmen, also, was the view that a person was not just a "walking beefsteak," but a spiritual being. Proponents of "New Age" or "metaphysical" belief systems, like Olszewski, and of fundamentalist Christianity, like Ortner and Lee, have in common a strong belief in the spiritual realm and the after-life; they either attempt to convey these beliefs to their audience or rely on them as a criterion for their notion of the ideal spectator. All three, Olszewski and Lee, the salesmen, and Ortner, the evangelist, offered variants of the wonder show in which technology is presented as an aid to one's higher calling. They defined a therapeutic role for technology and in this way it finds its true place as the servant of human progress and not as a fearsome master.⁶⁶⁵

While Ortner and Olszewski appear to have a genuine desire to help their audiences and to demonstrate scientific principles, Lee is more slippery to categorize. An evaluation of his act points out the limitations set at the beginning of this work—that is, to consider the cultural impact of these shows outside the standard dialogue about the moral dangers of pseudoscience. Yet Lee's legal convictions for fraud and his obvious attempts to swindle his audience and prey upon their fears and desires make it difficult to take a thoroughly objective stance. He is an entertainer, seems reasonably knowledgeable technically, has a few "genuine" products to sell, yet also is attempting to sell miracles to which he has

⁶⁶⁵ This attitude can be opposed to the fear that technology is now "in the saddle" and propelling us forward into a frightening new world. This concern is traced in Langdon Winner, Autonomous Technology: Technics-Out-of-Control as a Theme in Political Thought (Cambridge: MIT Press, 1977).

no genuine access. Like the rainmakers who toured the drought-lands of Kansas one hundred years ago, he is out to make a buck, and will evoke the technological sublime to do so.

Yet Lee's "abuse" of the wonder show format does not relegate this study to a simple celebration of superstition and fraudulence. As in the day of Came, and the corporate shows of the 1930s, the wonder show can provoke interest in science and its possibilities. Such shows can also lampoon the tendency in western cultures to make scientists into ultimate arbiters of truth. The widening distance between the lay public and the technical elite has made of scientists an "exotic other," and as such, the wonder show can be viewed as an attempt to reclaim and mimic the scientific project, offering dramatic narratives that help to explain and place this "other" culturally.⁶⁶⁶

The wonder show can provide genuine educational value. The technological displays of Ortner, Olszewski, and even of Lee might encourage an interest in science in students. Wonder in itself can be a valuable tool. Carl Sagan, preeminent among contemporary skeptics, has stressed the importance of shows of wonder to fuel the scientific impulse. In the preface to The Demon-Haunted World (1995), Sagan recalled as a child visiting the 1939 World's Fair in New York City and being thrilled by displays—likely the work of GM's Kettering—

⁶⁶⁶ In this way, the wonder show can be seen as a side-branch of the long-lived popular culture archetype of the "mad scientist." See Roslynn D. Haynes, From Faust to Strangelove: Representations of the Scientist in Western Literature (Baltimore: Johns Hopkins University Press, 1994).

that announced “See Sound!” and “Hear Light!”⁶⁶⁷ Sagan insisted that his fascination with these world’s fair displays helped develop his interest in science. He argued that scientists needed to combine an openness to new ideas no matter how outlandish, or the capacity to wonder, along with the "ruthless scrutiny of all ideas."⁶⁶⁸

As with other skeptical accounts, however, Sagan's book was a warning about the rise of pseudoscience. He even offered the formula that "Pseudoscience is embraced, it might be argued, in exact proportion as real science is misunderstood."⁶⁶⁹ Sagan insisted that as scientific authority diminished in a society—as in post-Soviet Russia—pseudoscience, cults, and other noxious forms of thought would fill in the gap like weeds.⁶⁷⁰ The need for rationality, critical thinking, and social order appeared preeminent to Sagan. As such, he refused to appreciate pseudoscience on aesthetic grounds. Wonder shows like those of Lee would simply appall him, and the creationist agenda hidden beneath the surface of Ortner’s “Wonders of Science” show would make him cringe.

Critiques like those of Sagan have placed the wonder show into a larger debate about the dangers of pseudoscience. On one side are Sagan and other champions of scientific thinking, who fret about an apparent rise in superstition and decline in critical thinking, on the other are postmodern academics who see

⁶⁶⁷ Carl Sagan, The Demon-Haunted World: Science as a Candle in the Dark (New York: Random House, 1995), xiii.

⁶⁶⁸ *Ibid.*, 304.

value in a democracy of ideas and in grassroots challenges to scientific authority. If the skeptics are the prosecution, the postmodern academics are attorneys for the accused, a group which includes psychic mediums, creationist scientists, parapsychologists, cultists, and those that inhabit the fringe of science, such as wonder showmen Olzsewski and Lee. The efforts of such wonder showmen to synthesize the "scientific" with the "spiritual" in terms other than "separate spheres," and so to refuse homage to mechanistic science as the ultimate authority, makes many of those who claim the mantle of modernity uncomfortable. Performers and reformers who appear to straddle the divide between science and religion are easily targeted as promoters of dangerous pseudoscience. And, as in the nineteenth century, other performers, the guild of magicians, are prepared to aid in such debunking.

Dennis Lee, in particular—and with good reason—has drawn the wrath of researchers dedicated to debunking pseudoscience. Although there are many such groups, the best known is The Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP), an alliance of scientists, academics, and journalists that actively debunks fringe science, creationist science, and psychic research. It was founded in 1976, when the Christian fundamentalist challenge to evolution was on the rise, as well as the fad for psychic performers such as Uri

⁶⁶⁹ Ibid., 15.

⁶⁷⁰ Ibid., 17.

Geller. CSICOP has also found a large target for denouncements in the New Age community.

True to the efforts of magicians like John Nevil Maskelyne in the nineteenth century and Houdini in the early twentieth century, CSICOP has included the magician The Amazing Randi as one of its most vocal members. Randi's efforts in the 1970s to debunk psychic "spoon bending" performer Uri Geller helped gain him an audience, and enabled him to position himself as a crusader for the liberal consensus view of reality. Just as Houdini offered cash prizes to Spiritualists who could prove their abilities were real, the Amazing Randi has offered a "One Million Dollar Paranormal Challenge" to anyone who can demonstrate "any psychic, supernatural, or paranormal ability of any kind under satisfactory observing conditions."⁶⁷¹ Beneath the area in the application form where the applicant must place his signature is a note from Randi recommending that they try a few trial run "double-blind" tests before applying. He cautions, "Please be advised that several claimants have suffered great personal embarrassment after failing these tests."⁶⁷² Eric Krieg, an engineer who has dedicated much energy to debunking Dennis Lee, has mounted a similar

⁶⁷¹ "One Million Dollar Paranormal Challenge." James Randi Educational Foundation website. www.randi.org/research/challenge.html. 9 September, 2001.

⁶⁷² Ibid.

challenge, offering \$10,000 to anyone who can demonstrate a working free energy or "over unity" device.⁶⁷³

CSICOP, Randi, Krieg, and other skeptics would be delighted to be seen as policing the borders of legitimate science. Sociologists have argued that such "boundary maintenance" is crucial to the scientific project. Philosophers of science have long pointed out that a schism exists between boundary maintenance that relies strictly on methodological definitions of science and those efforts that consider ontology—that is, science's relation to basic beliefs about the structure of reality.⁶⁷⁴ An ontological bias common to many scientists is that of a mechanistic and materialistic universe. Such a bias, for example, made it difficult for many scientists and academics to take J.B. Rhine's methodologically-respectable efforts to prove E.S.P. seriously. The forces Rhine wished to isolate simply did not mesh with the mechanistic worldview. Despite the engrained sense that science is "without presupposition," scientists often rely on such biases to identify and stigmatize deviant science or pseudoscience. At least one portion of this ideology is "instinctive;" judgements made to decide what is or is not a sound

⁶⁷³"Eric's Open Offer to Validate Claims of Free Energy."
<http://www.users.voicenet.com/~eric/freetest.html>. 21 March, 2002.

⁶⁷⁴ For example, Larry Laudan in Progress and Its Problems (Berkeley: University of California Press, 1977), distinguished empirical problems from conceptual problems in science, and noted that one category of the latter could be labeled "worldview problems," when a scientific theory "is in conflict with any component of the prevalent *world view*,"55.

basis for science or appropriate research will partially depend on the reflexes and tastes of the elite members of the community.⁶⁷⁵

While not all scientists of necessity share the ontological assumption of a mechanistic and materialistic universe—a vision certainly threatened by quantum mechanics—it is fair to say that most of the members of CSICOP would adhere to such a vision. James Randi, for example, in his effort to debunk “near death” experiences, remarked that he also had had two near death experiences. During these experiences, he also saw a tunnel of light. However, he concluded that this was simply a case of wish fulfillment, a product of his brain’s last chemical frenzies. “Just because you see something doesn't mean there's a real tunnel or a real light...It's a physiological phenomenon, not a spiritual phenomenon. It's what happens when the nervous system begins to relax.”⁶⁷⁶ His explanation has no firmer basis in truth than that of the “near death” theorizers. Others, with different ontological assumptions, would take such experiences as evidence pointing to the possibility of an afterlife.

CSICOP members often justify their policing of science's boundaries as a ground-clearing effort that allows scientists to dedicate valuable time instead to research, but certainly some scientists, such as Carl Sagan, have joined in the

⁶⁷⁵ See James McLendon, Deviant Science (Philadelphia: University of Pennsylvania Press, 1984), 2-3, and R.G.A. Dolby, “Reflections on Deviant Science.” In Roy Wallis, ed., On the Margins of Science (Staffordshire, England: University of Keele, 1979), 9-47.

⁶⁷⁶ Jerry Libonati, “Postcards from the Afterlife.” Austin American Statesman, 14 March 2002, E4. Randi has become the person journalists turn to to offer the debunkers view on virtually any paranormal phenomenon.

skeptical effort. Another, Robert L. Park, a physicist and director of the American Physical Society's public affairs office in Washington, D.C., joined the skeptical movement with great glee and gusto when he stitched together a number of his editorials denouncing pseudo-science into the book Voodoo Science: The Road from Fraud to Foolishness (2000). He dedicated chapters to ridiculing the free energy movement, Dennis Lee's schemes, perpetual motion, belief in alternative medicine, channeling, and other fads that, in his mind, were mere superstition, thinly veiled.

Park complicated Sagan's simple assertion that pseudoscience rises when scientific thinking wanes. Several times in his book Park asked whether, in some way, scientists in fact were to blame for the proliferation of pseudo-science today—particularly those elements of it which can be found in the New Age movement. He noted that public hostility towards scientific authority figures was on the rise; if science's involvement with government and the military was regarded as patriotic during World War II, the youth movement and the student protests of the Vietnam War era had changed these positive associations. Likewise, possibly with mock-humility, he asked: "Did we set people up for this? In our eagerness to share the excitement of discovery, have scientists conveyed the message that the universe is so strange that anything is possible?"⁶⁷⁷

⁶⁷⁷ Robert L. Park, Voodoo Science (New York: Oxford University Press, 2000), vii.

The concern at the base of this question parallels one raised by Sigmund Freud in his discussion of telepathy in the 1920s. Freud believed in the reality of telepathy, but chose not to publicize it, because to do so, with its mechanism unexplained, would be to encourage occultists to raise a ladder on which to "rise above science."⁶⁷⁸ Park's account, though addressing the concerns of his day, points to this historical reality—occultists have frequently seized on the metaphoric implications of new scientific discoveries, as with electromagnetism in the late nineteenth century. The wonders of science have almost always been linked by the public to greater mysteries. And at least as early as the Spiritualist and animal magnetism movements of the nineteenth century, participants have attempted to legitimize their interests in scientific terms.

Yet, one physicist with an interest in free energy, parapsychology, and other otherworldly topics, has argued—much like William James at the turn of the last century—that the scientific method can be relied on independently of the mechanistic-materialistic worldview. He has insisted that proclaiming the reality of such “paranormal” forces as telepathy and precognition need not "open the floodgates" to the occult. This physicist, Hal Puthoff, has commented that his research in parapsychology had left him with the conviction that the truth of the paranormal "must be taken into account in any attempt to develop an unbiased

⁶⁷⁸ Sigmund Freud, "Psychoanalysis and Telepathy," (1921) in George Devereaux, editor, Psychoanalysis and the Occult, 58.

picture of the structure of reality."⁶⁷⁹ Freud too, changed his mind and concluded that science should be trusted to eventually handle the challenge of an occult force found to be real.

The refusal to disbar phenomena once called occult—or to actively court such phenomena—is also more in line with the postmodernist academics' view of the current struggle to control knowledge and information. If activist scholars once would have preferred to align themselves with science as opposed to superstition, today's activist scholar, more often than not, would prefer to battle against science's hegemony, and to do so often embrace “superstition.” As with the skeptics, they lay claim to a “progressive” attitude. They argue that it is more “progressive” to permit the noxious flowers of pseudoscience to flourish than it is to attempt to stamp them out in the name of a higher rationality. One could also read these academics' efforts as a somewhat petulant attempt to regain authority in the name of the humanities.

Such postmodernist theorists argue that no one person or group, any longer, can proclaim themselves the ultimate authority on truth; meaning no longer has a center; "reality" itself is malleable. Sagan's example of pseudoscience proliferating after the fall of the Soviet regime points to his placing high value on order and rationality as well as on critical thinking. Some postmodernists, tending to extreme relativism and pessimism, lament that critical

⁶⁷⁹ Hal E. Puthoff, "CIA-Initiated Remote Viewing Program at Stanford Research Institute."

thinking can at best help us navigate through the endless hall of mirrors that late capitalism has erected, a media-saturated society that, according to theorist Jean Baudrillard, has encouraged an epistemological “collapse of the real.”⁶⁸⁰ The liberal consensus that once permitted “a center to hold” has vanished. Political theorist Jodi Dean, for example, has argued that all claims to truth rely on tissues of evidence much like those that hold together conspiracy theories.⁶⁸¹ Though allied to the relativists, Andrew Ross appeared more interested in coaxing into existence a science “for the people.” Unlike Park, these academics do not bemoan the passing of the golden age of World War II, when scientists and physicists were universally hailed as authorities with a monopoly-hold on the one true vision of reality.

The postmodernists, like the members of CSICOP, ultimately make their argument on a political basis. Both feel they know what is best for the health of a democracy. CSICOP members believe that their efforts will remove noxious beliefs from the public sphere and help genuine critical thinking to flourish. To give one example, Michael Shermer, the Director of the Skeptics Society, sent copies of his book Why People Believe Weird Things to numerous academics in 2001, along with a copy of his Skeptic magazine, and a glossy pamphlet called

Journal of Scientific Exploration. Vol. 10, no. 1, 1996, 76.

⁶⁸⁰ One forum in which Baudrillard announced this idea was in an analysis of the works of science fiction author Philip K. Dick. See Jean Baudrillard, “Simulacra and Science Fiction,” Science Fiction Studies, Volume 18, 1991, 309-13.

⁶⁸¹ See, in particular, Jodi Dean, Aliens in America: Conspiracy Cultures from Outerspace to Cyberspace (Ithaca: Cornell University Press, 1998).

"The Baloney Detection Kit," which urged academics to develop curricula around the problem of pseudoscience. Such courses would also "hook students into learning about how real science works."⁶⁸²

Shermer, like Randi, and others, was certain that a healthy democracy is dependent on a rational public with an accurate conception of the world. The position of these "skeptics" might be likened to the ideology of republicanism promoted by the elites of the eighteenth and nineteenth centuries. This ideology insisted that a democracy can only flourish with a virtuous, educated public. In melodramas of the early Republic era that played out this ideology, the virtuous American farm girl falls prey to foreign or urbanized seducers whose base motives and character are ultimately revealed.⁶⁸³ According to the modern version of this melodrama, the virtuous public should not give in to the seductive maneuvers of pseudoscientists, postmodernists, or New Age charlatans with "foreign"—i.e. unscientific—heritage. In both cases it is the duty of an educated elite to tend to the education and moral training of the masses.

Offering an opposing viewpoint, academics like Andrew Ross and Jodi Dean are concerned less with "public virtue" and more with encouraging a

⁶⁸² Michael Shermer and Pat Linse, "The Baloney Detection Kit." Skeptics Society publication, 2001, 2. The booklet also included "Eight Sample Syllabi: How to Teach a Course in Science & Pseudoscience." Shermer adds narrative interest to his argument in Why People Believe Weird Things (New York: W.H. Freeman and Company, 1997), by framing it as a story of a conversion. In the introduction and early chapters, he discusses his dependency on quack medical treatments and athletic enhancement regimens when he had been a bicycle racer, prior to "seeing the light." See Shermer, 13-15.

democracy of ideas.⁶⁸⁴ They argue that the flowering of pseudoscience and conspiracy thinking on the internet offers a healthy antidote to establishment thinking. Though they do not necessarily embrace pseudoscience in itself, they do embrace it as a symptom of dissent. Scientists for too long have had a lockhold on the "Truth." Opposition to scientific pronouncements on matters such as UFOs or medical treatments imply a public wishing to exercise its independence and shake off the controls of experts. Presumably, the opposing skeptics are attempting to enforce a "top-down," elitist model of social control.⁶⁸⁵ The postmodernists would also argue that skeptics such as Sagan are naïve to assume that the "scientific" worldview is automatically progressive. Even if the democratic sharing of ideas is a central value in the scientific community, scientific and technological research

⁶⁸³ For a history of the melodrama in America and its republican quotient see David Grimsted, Melodrama Unveiled (Chicago: University of Chicago Press, 1968).

⁶⁸⁴ See Andrew Ross, Strange Weather: Culture, Science and Technology in the Age of Limits (London: Verso, 1991), especially 1-74. Ross found himself at the center of an intellectual furor when, as a guest editor he published physicist Alan D. Sokal's hoax, "Transgressing the Boundaries: toward Transformative Hermeneutics of Quantum Gravity." Social Text, #46/47, Spring, 1996, 217-52. Sokal later made the case that his hoax was meant to critique the postmodern left's new embrace of intellectual relativism and belief that there no longer was an objective reality to refer to or describe scientifically, as well as their reduction of all "reality" to linguistics. Sokal's hoax of the cultural studies stance towards science became fodder for a mini-book boom, including, editors of Lingua Franca, The Sokal Hoax: The Sham that Shook the Academy (Lincoln: University of Nebraska, 2000); Noretta Koertge, editor, A House Built on Sand: Exposing Postmodernist Myths about Science (New York: Oxford University Press, 1998); Alan D. Sokal, Jean Bricmont, editors, Fashionable Nonsense: Postmodern Intellectuals' Abuse of Science (New York: Picador, 1998); and Paul D. Gross, Norman Levitt, editors, Higher Superstition: The Academic Left and Its Quarrels with Science (Baltimore: Johns Hopkins University Press, 1997).

⁶⁸⁵ Both the skeptic and postmodern viewpoints are seductive in their own right. One wonders, though, if giving tacit encouragement to website theorists with genuinely noxious claims, as, for example, those that claim the holocaust never happened will ultimately benefit "the people." Likewise if "elitist" in stance, the skeptics avoid the elitist jargon common to the cultural studies theorists.

has flourished under all sorts of patronage, including that of nineteenth-century racist elites, twentieth-century fascist regimes, and military manufacturers who place profits above progressive democratic ideals.

Dean, Ross, and others are intent on helping the public regain political power even at the risk of allowing "superstition" to flourish. The skeptics are intent on restoring rationalism, and, to scientists, the authority that is their due. Like the alien visitor Klaatu in the film "The Day the Earth Stood Still," they conclude that scientific thinking is our last best hope. Skeptical critics long to see scientists restored to a condition of cultural prestige, a condition tarnished during the 1960s counter-cultural movements, with their vilification of scientists and technocratic rule.

Re-establishing the cultural authority of science and scientists was high on Park's agenda in his book Voodoo Science. If one free energy researcher on the INE website insisted that the garage tinkerer may be the true explorer of frontiers, and the "point man" of civilization, Park made it clear that it is not the lone tinkerer who is "the point man," but rather the scientist. Park also argued that to regain cultural authority, the scientist must follow a strategy quite different than that which led to scientists' eager participation in the popularization of science at the 1933 Chicago world's fair. Park wrote that scientists "are eager to tell people what it's like on the frontier. They want to talk about neutrino oscillators, Higgs bosons, cosmic inflation, and quantum weirdness—the things that excite them."

However, they must learn to stop "pandering to the public's appetite for the 'spooky' part of science" or the public will assume that "anything is possible."⁶⁸⁶

The appropriate wonder show formula to someone like Park is for the public to admire the combined mental processes of scientists; that is, if we need a vision of human powers advancing alongside technology, we should be satisfied with the advancing body of scientific knowledge. This, too, can provide a thrill. In this respect, Park agreed with Sagan who remarked that "when we recognize our place in an immensity of light-years and in the passage of ages...then that soaring feeling, that sense of elation, is surely spiritual."⁶⁸⁷ Yet if wonder is left to amateurs, who evoke scientifically imprecise mappings of the universe, Park argued, we all will suffer the consequences of the return of "superstition."

Park concluded his book by describing a wonder show he attended in 1996, an IMAX film titled "Cosmic Voyage" at the Air and Space Museum in Washington, D.C. He described how the film's "'cosmic zoom' hurled viewers to the outer limits of the universe, plunged them down to the domain of the quark, and sent them tumbling back through billions of years..."⁶⁸⁸ It sounds like a production that Charles Came, with his magic lantern slides of protozoa and the solar system in the 1840s would have approved, as would Irwin A. Moon, whose films of the 1950s also relied on comparing microcosmic and macrocosmic

⁶⁸⁶ Park, 193-4.

⁶⁸⁷ Sagan, 29.

⁶⁸⁸ Park, 212.

dimensions. Park was profoundly stirred by the film. He particularly admired the fact that the production did not offer spectators the comfort that the universe "cares about them."

Yet he was an "expert;" how would a layperson respond—perhaps with the inappropriate, irrational assurance that the universe cared? Fortunately, Park's secretary had also attended the film; in order to comprehend how the average person might process such knowledge, Park quizzed her on her reactions. He learned that she was first terrified, but left the theater filled with a sense of 'wonder.' She realized, as did he, that the real source of wonder was the reach of human knowledge. The ultimate wonder was that humanity—though merely "self-replicating specks of matter...have managed to figure all this out."⁶⁸⁹

Park insisted that credit for such knowledge must go to the same scientists whom he had earlier blamed for making lay people believe that anything was possible when told about quarks and black holes. Lurking beneath Park's kindly tone was that of a scold. The contemporary refusal to give scientists their due, he implied, was an aberration. Park's secretary and the rest of us should be satisfied with the tales scientists tell. The public cannot be a part of the discovery process, nor permitted to browse among different cosmologies or belief systems. Instead, according to Park, we must rely on scientists to choreograph the wonder show; in turn, they will continue to allow us front row seats.

⁶⁸⁹ Park, 213.

Bibliographical Essay

My research for this book involved the use of many archival and primary sources, but also, as the historical breadth of the project necessitated, many secondary sources. This essay will begin with a discussion of scholarly works that have themes in common with this dissertation, and then, relying on the chapter plan as a scheme for arranging the topics, evaluate research sources. The essay should give readers and researchers an understanding of the archival materials, primary texts, and the secondary texts drawn upon.

As the genre here defined as "wonder shows" has no previous histories, I will mention first a few texts that have close thematic ties. John C. Burnham, in How Superstition Won and Science Lost (Rutger's University Press, 1987), looked at how science has been popularized in the past two centuries and argued that educational standards slipped with the rise of mass culture in the twentieth century. His book is a good introduction to the historical debates about science and superstition and the way therapeutic culture has shaped science journalism. Iwan Morus's Frankenstein's Children: Electricity, Exhibition, and Experiment in Early Nineteenth-Century London (Princeton: Princeton University Press, 1998) examined cultural hierarchy within the trade and also considered the electrical

exhibition as a performance genre. Jeffrey Sconce's Haunted Media: Electronic Presence from Telegraphy to Television (Durham: Duke University Press, 2000) argued that in new media such as telegraphy and radio the public perceived models of expanded consciousness and forums from which emerged a new species of "ghostly" electronic presence. From the beginning, these factors led to the blending of the technological and the supernatural in the popular mind.

This dissertation also relied on a thematic strand from Rogan Taylor, The Death and Resurrection Show (London: Anthony Blond, 1985), which argued that modern show business is a historical outgrowth of pre-industrial shamanism. While I do not entirely subscribe to the historical grounding of Taylor's argument, pointing to shamanism as a mythic narrative underpinning much western drama—particularly wonder shows—makes a great deal of sense. Anthropologist Victor Turner's notion that pre-industrial tribal ceremonies evoked a "liminal" or sacred threshold for participants to cross while modern theater evokes a quasi-liminal or "liminoid" space also shore up this position. See Turner, From Ritual to Theater (New York: Performing Arts Journal Publications, 1982).

The chapter that examines show business and electricity in the antebellum owes much to contemporary scholarly analysis of P.T. Barnum. Neil Harris, Humbug: the Art of P.T. Barnum (Boston: Little Brown, 1973) is still an excellent point of departure, as is Bluford Adams, E Pluribus Barnum (Minneapolis: University of Minnesota Press, 1997). Recent works by James W. Cook, The Arts

of Deception (Cambridge: Harvard University Press, 2001), and Benjamin Reiss, The Showman and the Slave (Cambridge: Harvard University Press, 2001) also add to the Barnum scholarship. For my look at the early history of museums I relied on two books about antebellum museum curator Charles Willson Peale, Charles Coleman Sellers, Mr. Peale's Museum (New York: W.W. Norton, 1980), and David Brigham, Public Culture in the Early Republic: Peale's Museum and its Audience (Washington DC: Smithsonian Institution Press, 1995).

The staff at the Smithsonian Museum led me through the archival material available on Charles Came, the nineteenth-century showman highlighted in the first chapter. His letters are available at the National Museum of American History archives (NMAH), in Washington D.C., and much of his apparatus is also in storage at the Smithsonian Institution; queries will eventually place you on a shuttle bus from the NMAH to the storage facility that houses, among other Came paraphernalia, his foot warmer, orrery, posters, healing crystal, and electrostatic devices. I placed Came in the medicine show context with the help of Brooks McNamara's colorful history of the medicine show, Step Right Up (Jackson: University Press of Mississippi, 1995[1975]), Andrea Stulman Dennett, Weird and Wonderful: The Dime Museum in America (New York: New York University Press, 1997), and several histories of medicine in America, including J.G. Burrow, Organized Medicine in the Progressive Era (Baltimore: Johns Hopkins University Press, 1977), and J.H. Cassedy, Medicine in America: A

Short History (Baltimore: Johns Hopkins University Press, 1991). Microfilm reels of the New York Sun of that era also revealed how deeply the penny press relied on revenues from patent medicine and “irregular” medical advertisements.

My chapters focusing on the early electrical industry relied on several overviews; among those not previously mentioned are Thomas P. Hughes, Networks of Power (Baltimore: Johns Hopkins University Press, 1983), and David E. Nye, Electrifying America: the Social Meanings of a New Technology (Cambridge, MIT Press, 1990). Another, Caroline Marvin’s When Old Technologies Were New (New York, Oxford University Press, 1988) looked at public reception of early technologies and at the electrical industry workers’ perception of their own labors. Useful bibliographies of electrical history include: Joyce E. Bedi, Ronald R. Kline, and Craig Semsel, Sources in Electrical History: Archives and Manuscript Collections in U.S. Repositories (New York: IEEE Center for the History of Electrical Engineering, 1989); and Judith A. Overmier and John Edward Senior, Books and Manuscripts of the Bakken (Metuchen, N.J.: The Scarecrow Press, 1992), which is a useful catalogue of books about electrical healing, animal magnetism, mesmerism, and allied fields, all of which, along with a historical collection of electrical devices, can be found at the Bakken: A Library and Museum of Electricity in Life, in Minneapolis.

My look at electrical inventors involved an examination of the publicity crazes surrounding Nikola Tesla, Thomas Edison, and Charles P. Steinmetz at the

turn of the twentieth century. The cult that continues to grow around Tesla makes him a figure who bridges the “wonder show” circa 1890 with that of today. Tesla biographies include John J. O’Neill, Prodigal Genius: The Life Story of Nikola Tesla (New York: Ives Washburn, 1944), and Margaret Cheney, Tesla: Man Out of Time (Englewood Cliffs, N.J.: Prentice-Hall, 1981); the most recent and least hagiographic treatment of Tesla is in Marc J. Seifer’s Wizard: The Life and Times of Nikola Tesla (Secaucus, NJ: Carol Publishing Group, 1996). In defense of O’Neill’s early study, his notion that Tesla engineered his own persona of “superman” resembles the vein of scholarship of the past few decades that examines how celebrities like Benjamin Franklin and Thomas Edison have crafted their identities for public consumption. As most of Tesla’s papers and effects were returned to Yugoslavia following his death in 1943 there is little in the way of primary materials on Tesla to be found in the United States. The Kenneth Swezey Papers at the NMAH are somewhat useful as Swezey, a science journalist, was long a fan of Tesla, and the primary instigator of the celebrations of Tesla's 75th anniversary in 1931, as well as his 100th anniversary in 1956. These papers include Swezey's correspondence with other Tesla enthusiasts and a few letters from Tesla, as well as clippings about Tesla and later Tesla-imitators, copies of Swezey’s articles heralding Tesla as a forgotten genius, samplings of Tesla’s stationary, and such memorabilia as one of the meticulous inventor’s dinner gloves.

The Edison Papers, an enormous collection, is now on line. I found the papers difficult to work with via my own internet connection; it also appeared that only the first few pages of some of the lengthier manuscripts were available electronically. While biographies of Edison are many, I relied on Paul Israel, Edison: A Life of Invention (New York: John Wiley and Sons, Inc., 1998); Israel suggested, along the lines of O'Neill's study of Tesla, that Edison's public persona was one of his greatest inventions. The electrical engineer Steinmetz is the subject of a biography that handles technical matters and cultural history both deftly, Ronald R. Kline, Steinmetz: Engineer and Socialist (Baltimore: Johns Hopkins Press, 1992). Following Caroline Marvin's lead, I also browsed through decade long runs of such electrical trade journals and popular science journals as Electrical Review, American Electrician, The Electrician, Electrical World, and Hugo Gernsback's Science and Invention. These periodicals are a rich source of material charting the rise of the electrical industry and the "electrical culture" at large.

Research for the chapters on stage hypnotism, stage magic, and mind reading overlapped. The literature of mesmerism and hypnotism is vast. A good starting point is Adam Crabtree, Animal Magnetism, Early Hypnotism, and Psychical Research, 1766-1925: An Annotated Bibliography (White Plains, N.Y.: Kraus International Publications, 1988). Solid secondary sources include Robert Darnton, Mesmerism and the End of the Enlightenment in France (Cambridge,

Massachusetts: Harvard University Press, 1968), Robert C. Fuller, Mesmerism and the American Cure of Souls (Philadelphia: University of Pennsylvania Press, 1982), Alan Gauld, A History of Hypnosis (Cambridge, England: Cambridge University Press, 1992), and Alison Winter, Mesmerized: Powers of Mind in Victorian England (Chicago: University of Chicago Press, 1998). Jean-Roch Laurence and Campbell Perry, Hypnosis, Will & Memory (New York: Guilford Press, 1988) also provides insight into historical efforts to curb the use of hypnotism. The turn-of-the-century performer Professor Leonidas's Stage Hypnotism (Chicago: Bureau of Stage Hypnotism, 1901) can be found in many rare book archives, including the Harry Ransom Humanities Research Center (HRHRC) at the University of Texas, and the Library of Congress—it is a fascinating, book-length work that offers a novelistic impression of a hypnotist on the road plying his trade. The run of Sydney Flower's Hypnotic Magazine, which can be found at the Library of Congress and other collections, offered superb insights into the anti-hypnotism campaign of the progressive era. Also extremely helpful to this chapter were Houdini's bound collection of pamphlets on hypnotism at the Library of Congress, and Houdini's scrapbook clippings about his friend, the hypnotist and "bloodless surgeon," Walford Bodie. The HRHRC, which has a great deal of Houdini's correspondence, also includes letters from Bodie to Houdini begging for the original electric chair, which Houdini had acquired, so that Bodie could use it as a stage prop. Houdini eventually relented.

Few academics have treated stage magic. Cook, mentioned above in relation to Barnum, is a recent exception; another work, from sociologist Robert A. Stebbins, The Magician: Career, Culture, and Social Psychology in a Variety Act (Toronto: Clarke Irwin, 1984), is an ethnography of amateur and professional stage magicians in Canada. Knowledge of the history of the craft is crucial to magicians, and many have shown a taste for scholarship: Houdini wrote several works and commissioned, H.J. Moulton, Houdini's History of Magic in Boston 1792-1915 (Glenwood, Illinois: Meyerbooks, 1983), a very useful sourcebook that tracks the variety acts that visited that city in the nineteenth century. Milbourne Christopher and Maurine Christopher, The Illustrated History of Magic (Portsmouth, NH: Heinemann, 1996) is a valuable history, lavishly illustrated, while Ricky Jay, Learned Pigs & Fireproof Women (New York: Warner Books, 1986) first led me to the raffish character of Walford Bodie.

In this work, Houdini is treated as a primary actor in the anti-Spiritualist movement. While biographies of Houdini are many, I relied primarily on Raymund Fitzsimons, Death and the Magician: The Mystery of Houdini (New York: Atheneum, 1981), and Kenneth Silverman, Houdini! (New York: Harper Collins, 1996), which discussed Houdini's anti-Spiritualism. John Kasson's Houdini, Tarzan, and the Perfect Man (New York: Hill and Wang, 2001) offered an analysis of the gender tensions in Houdini's performances. For primary resources on Houdini, I relied on the Houdini collection at the Harry Ransom

Humanities Research Center (HRHRC) at the University of Texas at Austin and the Harry Houdini Collection at the Rare Book and Special Collections division at the Library of Congress. More Houdini material can be found at the Houdini Historical Center in Appleton, Wisconsin. The HRHRC Houdini Collection includes numerous files of clippings, playbills, posters, photographs, and correspondence. The HRHRC also houses the extensive Arthur Conan Doyle collection, which includes, among other materials, a large trove of books on Spiritualism, letters from Beatrice Houdini to Conan Doyle, letters from Spiritualist Le Roi Crandon to Conan Doyle, and Conan Doyle's annotated copy of Houdini's hatchet job on Spiritualism, *A Magician Among Spirits* (New York: Harper and Brothers, 1924). The Houdini Collection at the Library of Congress is enormous. One warning, numerous volumes of Houdini's scrap books there are now generally in poor condition and researchers will instead be asked to look at microfilm, which also can be ordered via inter-library loan. The Library of Congress has several other magic collections in addition to its Houdini Collection. I found their collections of historical magic equipment catalogues a valuable aid to my thinking about the history of stage magic.

Perhaps my favorite research experience involved a trip to the Magic Castle, in Hollywood. This institution serves both as a training ground for amateur stage magicians and a showcase of established talent. Its library, designed as a resource from which magicians can draw inspiration, has a small but useful

collection of historical pamphlets about magic and hypnosis. As with other guests, scholars visiting the Magic Castle are required to say “open sesame” to enter the building; while in the library looking at turn-of-the-century hypnotism pamphlets, I also enjoyed watching the librarians demonstrating to other guests various trick shuffles.

The literature of Spiritualism is vast. Useful secondary sources include Alan Gauld, The Founders of Psychical Research (New York: Schocken Books, 1968), and R. Laurence Moore, In Search of White Crows (New York: Oxford University Press, 1977). The feminist study of Spiritualism has been an important scholarly development. Examples of such work include Ann Braude, Radical Spirits: Spiritualism & Women’s Rights in 19th Century America (Boston: Beacon Press, 1989), and Alex Owens, The Darkened Room: Women, Power and Spiritualism in Late Victorian England (Philadelphia: University of Pennsylvania Press, 1990). Also delving into the connection between Spiritualism and feminism is Mary Gabriel, Notorious Victoria (Chapel Hill: Algonquin Books of Chapel Hill: 1998), a biography of Victoria Woodhull, a nineteenth-century Spiritualist, feminist, free love advocate, stock broker, and presidential candidate.

My look at mind reading tied together variety performances with the history of Spiritualism, psychic research, and parapsychology. Seymour H. Mauskopf and Michael R. McVaugh, The Elusive Science (Baltimore: Johns Hopkins Press, 1980) is an excellent history of psychic research and particularly

of Joseph Rhine's role in the founding of parapsychology. Gauld's study of the Society for Psychical Research is also important. I also found useful two anthologies, William James, Essays in Psychical Research (Cambridge: Harvard University Press, 1986), and George Devereux, ed. Psychoanalysis and the Occult (New York: International Universities Press, Inc., 1979 [1953]). The theater collection at the HRHRC includes some excellent clipping folders for numerous stage magicians and "mystic vaudevillians." There I found much of my material on the mind readers The Zancigs, S.S. Baldwin, and the celebrated muscle reader Washington Irving Bishop. The Library of Congress also has Houdini's bound volumes of pamphlets about mind reading.

Those interested in the history of world's fairs would do well to begin with Robert Rydell's texts, All the World's a Fair: Visions of Empire at American International Expositions, 1876-1916 (Chicago: University of Chicago Press, 1984), and World of Fairs: The Century-of-Progress Expositions (Chicago: University of Chicago Press, 1993). A handy single volume on world's fair is Rydell, John E. Findling, and Kimberly D. Pelle, Fair America (Washington DC: Smithsonian Institution Press, 2000). John E. Findling, Chicago's Great World Fairs (Manchester: Manchester University Press, 1994) concentrated on the World's Columbian Exposition and the Century of Progress Exposition. Roland Marchand's Creating the Corporate Soul (Berkeley: University of California Press, 1998) treated at length the history of world's fairs, and David E. Nye

explored the architecture and electrical displays of world's fairs in Electrifying America. For primary holdings on world's fairs, the Smithsonian Institution has large reserves. The University of Illinois at Chicago (UIC) houses the papers that the Century of Progress management generated during that 1933-34 world's fair; the Century of Progress collection at UIC also includes extensive collections of newspaper and magazine clippings, pamphlets, management correspondence, press releases, and scrap-books.

James Gilbert Redeeming Culture: American Religion in an Age of Science (Chicago: University of Chicago Press, 1997) treated the career of the million volt evangelist Irwin Moon at length while probing the connections between evangelical Christianity, the armed forces, and the larger culture during the Cold War. The Moody Bible Institute Library in Chicago also has three boxes of material about Irwin Moon and his Sermons from Science. The folders, somewhat haphazard in arrangement, consist mainly of clippings of reviews of his lectures, press releases, publicity photographs, and internal documents meant for Moody officials or other Sermons from Science performers. Roland Marchand's Creating the Corporate Soul has an excellent account of General Motors' Parade of Progress of the 1930s. Biographies of General Motors's Charles "Boss" Kettering include Stuart Leslie, Boss Kettering (New York: Columbia University Press, 1983). One archive I did not get the chance to visit is the GMI Institute in Flint, Michigan, which has documentation of GM's Parade of

Progress in its Charles F. Kettering Papers.

The literature of UFOs is a thicket that only the stalwart should enter. George M. Eberhart has provided an excellent two volume bibliography, UFOs and the Extraterrestrial Contact Movement (Metuchen, NJ: The Scarecrow Press, Inc., 1986). Another serviceable bibliography is Lynn Catoe, UFO's and Related Subjects: An Annotated Bibliography (Washington D.C.: United States Government Printing Office, 1969). Academic interest in UFO culture is growing. Leon Festinger, Henry Riecken, and Stanley Schachter, When Prophecy Fails (New York: Harper Torchbooks, 1964 [1956]) is an early work treating the sociology of one 1950s flying saucer cult. David M. Jacobs, The Flying Saucer Controversy in America (Indiana University Press, 1975) provided the first academic history of this subject. Another level-headed history of UFOs is Curtis Peebles, Watch the Skies! A Chronicle of the Flying Saucer Myth (Washington: Smithsonian Institution Press, 1994). Walter McDougall provided an excellent history of the United States's space programs in The Heavens and the Earth: A Political History of the Space Age (New York: Basic Books, 1985). Jodi Dean, Aliens in America (Ithaca: Cornell University Press, 1998) treated the cultural and political ramifications of interest in UFOs, aliens, abductions, and conspiracy theory.

The flying saucer cults emerged from America's occult underground, much of which can be traced back to 1875, the year that Helena Blavatsky

founded the Theosophical Society, recruiting many prominent citizens as members, including Thomas Edison. For a thorough discussion of the Theosophy movement that avoids the impenetrable jargon that members have offered in their own accounts, see Bruce F. Campbell, Ancient Wisdom Revived: A History of the Theosophical Movement (Berkeley: University of California Press, 1980). Also somewhat useful is James Webb, The Occult Underground (LaSalle, IL.: Open Court, 1974).

Carl Jung was one of the first to put a religious spin on UFO culture in Flying Saucers: A Modern Myth of Things Seen in the Skies (Princeton University Press, 1978). Two more recent examples are James R. Lewis, ed., The Gods Have Landed: New Religions from Other Worlds (Albany: State University of New York Press, 1995), and Brenda Denzler, The Lure of the Edge: Scientific Passions, Religious Beliefs, and the Pursuit of UFOs (Berkeley: University of California Press, 2001). Encyclopedias such as Margaret Sachs, The UFO Encyclopedia (New York: G.P. Putnam's Sons, 1980) and Ron Story, editor, Encyclopedia of Ufos (Garden City, NY: Doubleday, 1980) are useful in exploring the literature of UFO enthusiasts. Of the 1950s contactee narratives, I would second Jung's vote for the most compelling to be Orfeo Angelucci's The Secret of the Saucers (Stevens Point, Wisconsin: Amherst Press, 1955). Margaret Storm's curiosity, The Return of the Dove (Baltimore: The Author, 1959), helped me connect the UFO cults of the 1950s to earlier occultist strands in American

culture. This book also shed some light on why Tesla has become such a cult figure in these communities, as well as among the alternative rock community, and right-wing and libertarian groups today.

My look at free energy and skeptics relied primarily on websites and periodicals. The skeptic literature, however, is vast. Burnham provided an overview of nineteenth-century anti-superstition efforts. Skeptic writers of the last few decades, however, appear to assume they are the first to worry about an American public “awash in a sea of faith.” While most skeptic authors abhor pseudoscience, those of good humor, such as Martin Gardner, at times reveal an aficionado’s appreciation for the nuances of such theories. A good entry point to the skeptic literature is Martin Gardner, Fads and Fallacies in the Name of Science (New York: Dover Publications, Inc., 1957). Other entries include Carl Sagan, Demon Haunted World (New York: Random House, 1995), Michael Shermer, Why People Believe in Weird Things: Pseudoscience, Superstition, and Other Confusions of Our Time (New York: W.H. Freeman, 1997), and Robert L. Park, Voodoo Science (Oxford: Oxford University Press, 2000). Numerous periodicals are also dedicated to the skeptical stance, including The Skeptical Enquirer, and Skeptic. The Amazing Randi keeps his followers informed of his debunking activities on his website. The journal Annals of Improbable Research offers send-ups of the rhetoric of scientific research, but serves as an insider

critique that does not stray philosophically beyond the bounds of the scientific orthodoxy whose members are its primary subscribers.

Those who would like to balance such readings with accounts that applaud fringe thinkers might try Dean's Aliens in America, and Andrew Ross, Stormy Weather: Culture, Science, and Technology in the Age of Limits (London: Verso, 1991). For the earlier views of a playful critic of science, I recommend Charles Fort, The Books of Charles Fort (New York: Henry Holt and Company, 1941). Fort, who was a friend of Theodore Dreiser's, spent decades collecting clippings of strange phenomena such as showers of frogs or rains of slime and relied on these well documented but puzzling incidents to illustrate his theory that the ruling forces of the universe are capricious and far from interested in or bound to the latest scientific theories. Louis Kaplan's quasi-academic treatise, The Damned Universe of Charles Fort (Brooklyn: Autonomedia, 1993), written in the playful style of Fort, includes an essay that pays tribute to the master along with choice excerpts from Fort that illustrate his ruling ideas. The book is quite useful, as Fort's books, though full of insights and wit, get tiresome in the long haul. Another unabashed celebration of crackpots is Margaret Nicholas, The World's Greatest Cranks and Crackpots (New York: Exeter Books, 1984 [1982]). The Fortean Times is a British periodical dedicated to a Fortean point of view, but generally jettisons the "master's" wit and philosophical subtleties for a "Believe it or Not" approach, in a marketing sleight-of-hand that makes it far-less

entertaining than the title, cover, and cover price would lead the hopeful to believe.

VITA

Fred Robert Nadis was born in Chicago, Illinois on June 7, 1957, the son of Lorraine Nadis and Martin Nadis. In May 1980 he received the degree of Bachelor of Arts from the University of California at Santa Cruz, and in May 1985 he received the degree of Master of Arts from New York University. During the following years he taught English and literacy courses at various campuses in New York City, including the Borough of Manhattan Community College, LaGuardia Community College, New York City Technical College, and the College of New Rochelle. In September 1997 he entered the Graduate School of the University of Texas at Austin. At the University of Texas he has worked as an assistant instructor in the Department of Rhetoric and Composition and in the American Studies Department.

His academic publications include: "Of Horses, Planks, and Window Sleepers: Stage Hypnotism Meets Reform, 1836-1920," *Journal of Medical Humanities*, Fall, 2001; "Mechanical Dolls and Rank Ladies," *Left History*, Spring, 2001; "Facing the Divide: Turn of the Century Stage Magicians' Presentations of Rationalism and the Occult," *Journal of Millennial Studies*, Winter, 2000; and "Technology Meets Whimsy: The Cartoons of Rube Goldberg," *Proteus: A Journal of Ideas*, Spring, 1999.

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