

A FEW CINCINNATI
ECCENTRICS,
CRANKS & CURIOS

Nine Historical Vignettes

William B. Jensen
University of Cincinnati



Oesper Collections
Cincinnati, OH
2017

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*Dedicated to J. P. Foote, W. H. Venable
and O. Juettner*

*In appreciation of their pioneering attempts to
preserve the early intellectual history of Cincinnati*

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Preface

On the shelves of my personal library is a small volume dating from 1808 that bears the title *Portraits of Curious Characters in London with Descriptive and Entertaining Anecdotes* (1). As the title makes clear, it contains short sketches of various notable characters, who, either because of their behavior or physical appearance or both, were thought to be eccentric. My shelves also contain four 20th-century works and one 21st century work dealing with the same subject: a 1957 volume by Irving Wallace entitled *The Square Pegs: Some Americans Who Dared to Be Different* (2); a 1982 work by Margaret Nicholas entitled *The World's Greatest Cranks and Crackpots* (3); a 1984 work by John Michell entitled *Eccentric Lives and Peculiar Notions* (4); a 1991 work by John Timpson entitled *Timpson's English Eccentrics* (5); and a 2001 work by Paul Collins entitled *Banvard's Folly: Thirteen Tales of Renowned Obscurity, Famous Anonymity, and Rotten Luck* (6). All of this suggests that, between these two chronological extremes, there probably lies a small, but continuous, tradition of such books.

A related literature, at least when it comes to cranks rather than innocuous, but entertaining, eccentrics, was pioneered by August De Morgan in his classic 1872 volume, *A Budget of Paradoxes* (7), which dealt with cranks in the fields of mathematics and physics. This was followed by John Fiske's delightful essays "Forty Years of the Bacon-Shakespeare Folly" (1896) and "Some Cranks and their Crotchets" (1898) (8), and culminates in Martin Gardner's unrivaled 1952 classic, *In the Name of Science* (9).

As part of my research into the early history of chemistry in Cincinnati, I have come across any number of notable characters who

made an appearance in the early history of the Queen City (10). Some became permanent residents, whereas others lingered here only briefly before moving on to what they, no doubt, perceived as greener pastures – a part of that inherent restlessness so characteristic of much of early America. And in the freedom of recent retirement and the spirit of the above mentioned books, it occurred to me that a series of brief historical studies of some of these characters – ranging from mild eccentrics to out and out cranks, and with a few curios thrown in for good measure – might also make an entertaining book, though the end result hardly deserves such a designation and the term “booklet” would seem to be far closer to the mark.

*William B. Jensen
Cincinnati, OH
April 2017*

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I

Dr. Goforth's Vanishing Fossils or the Case of the Accordion Carnivore

Doctor William Goforth (figure 1) was born on 26 December 1766 in New York City, one of at least two children of Major William Goforth, a veteran of the American Revolution and Member of the New York Assembly, and Catherine Meeks (1-3). He studied medicine in New York under Joseph Young and Charles McKnight, during which time he had the dubious distinction of escaping violence at the hands of an angry mob incited by rumors that he and his fellow students were dissecting a body as part of their anatomy class. Upon graduation in 1788, he decided to immigrate west and joined a party of pioneers floating down the Ohio River from Pittsburgh to Kentucky territory on flatboats. In the same party was an impoverished farmer from New Jersey named Isaac Drake and his family, whose three-year old son, Daniel, was destined to play an important role in Goforth's later career.

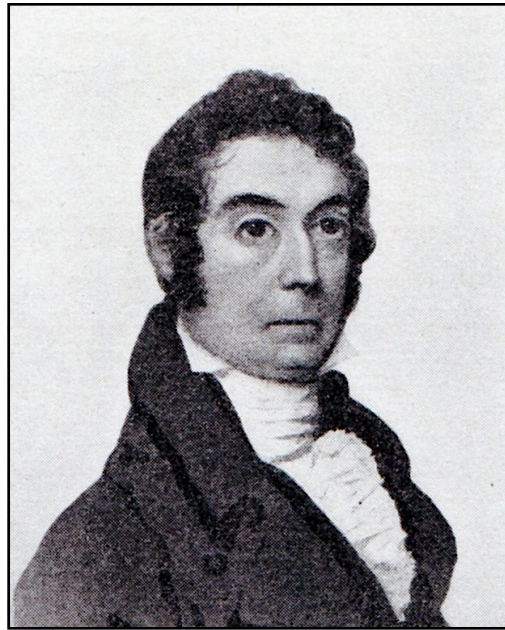


Figure 1. Dr. William Goforth
(1766-1817)

Initially settling in Washington, Kentucky, where he married a local girl named Elizabeth Wood, Goforth relocated in 1799 to Columbia (now Columbia-Tusculum), Ohio, just east of Cincinnati,

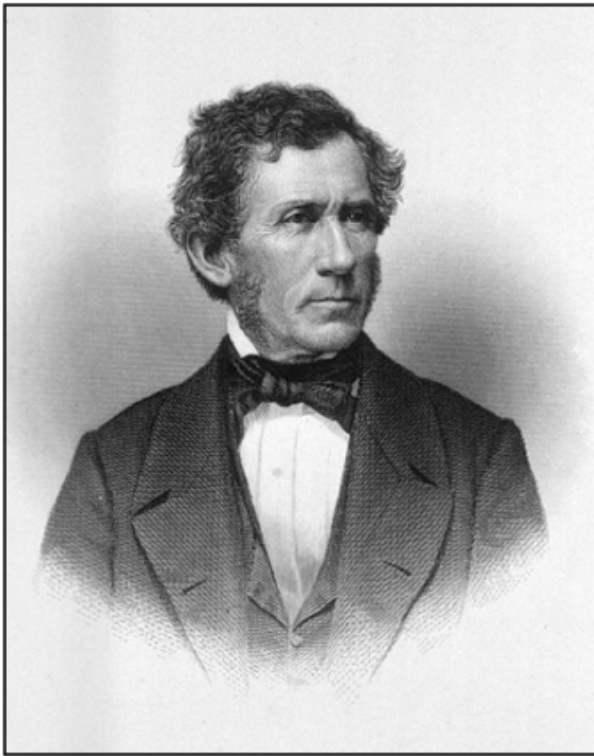


Figure 2. Dr. Daniel Drake (1785 -1852)
in later life.

where his parents were then living, and finally to Cincinnati itself in 1800. Here he set up his practice in what was known as the Peach Grove House, where he was soon joined by Daniel Drake (figure 2), now 15 years old, whom he had agreed to take on as an apprentice. Drake proved to be an exceptional student and in 1805 Goforth, under the authority granted him as “Surgeon General of the First Division of the Ohio Militia,” awarded Drake, at age 19, the first medical diploma issued west of the

Alleghenies, as well as making him a full partner in his medical practice.

Aside from his mentorship of Drake, Goforth’s other claim to medical fame was his early use of small pox vaccination, using samples of Jenner’s attenuated cowpox serum sent to him by Dr. Benjamin Waterhouse of Boston.

An Easy Mark

It is to Drake’s apprenticeship and subsequent partnership with Goforth that we owe most of our insights into his personality. Thus we know that he was addicted to stylish dress or rather “dressed with precision”

– to use Drake’s phrase – and that he “never left his house in the morning till his hair was powdered by an itinerant barber named John Arthurs, and his gold-beaded cane was grasped by his gloved hand.” Unfortunately, the only surviving portrait of Goforth (recall figure 1) dates from around 1815, by which time the fad for powdered wigs was long past. It shows him with a slightly startled look on his face, dressed in best “Beau Brummell” style, and looking very much like a character out of a Jane Austin novel.

Goforth’s penchant for stylish dress was also coupled to a love of elegant manners and etiquette. Indeed, it was reported that he not only had “the most winning manners of any physician in town,” but that he applied these indiscriminately to rich and poor patients alike. This no doubt accounted for his “extensive practice,” since in those days of heroic medicine an engaging bedside manner was often worth far more than a true medical competence. This love of style also made Goforth particularly susceptible to the charms of the occasional aristocratic French exiles who, fleeing the turmoil following the French revolution, sometimes passed through Cincinnati, usually en route down river to New Orleans.

Unfortunately these traits were also coupled to a total inability to manage money, an almost child-like trust in everyone he met, and a fondness for quick get-rich “schemes and novelties” that made him an easy mark for conmen and questionable investment opportunities. Thus, at one point, he engaged several diggers who promised to locate buried Indian treasure in the woods and Indian Mounds surrounding Cincinnati (1):

Dr. Goforth was a special patron of all who ... were engaged in searching for precious metals in the surrounding wilderness. They brought their specimens of pyrites and blends to him, and generally contrived to quarter themselves on his family while he got the

requisite analysis made by some black- or silversmith. In these searches Blennerism or the turning of the forked stick, held by its prongs, was regarded as a reliable means of discovering precious metals not less water. There was also in ... [Cincinnati] a man by the name of Hall, who possessed a glass through which he claimed to see many thousand feet into the earth.

Goforth then engaged in a scheme to raise and export Ginseng root for the China market and, when that failed, to harvest and sell East India Columbo Root, which had supposedly been discovered growing near Cincinnati. When it was revealed that the plants in question had been misidentified, he launched into a land scheme involving the Mad River region near present-day Urbana, Ohio. However, the scheme of most interest to our story was his plan, starting in 1803, to excavate tons of fossil bones from nearby Big Bone Lick, Kentucky, in order to make a fortune selling them to various museums on the East Coast and in Europe.

The Big Bone Lick Venture

Located roughly 25 miles southwest of Cincinnati, Big Bone Lick, Kentucky, was first visited by Europeans in 1739 in the guise of a party of French soldiers under the command of Charles de Longueuil that had been sent south from Canada to help fight the Chickasaw. While there, Longueuil collected an assortment of fossil bones which he eventually took back to France and deposited in the *Cabinet du Roi*, including a femur, a tusk, and three molar teeth (4).

Throughout the remainder of the 18th century, the site was visited at fairly regular intervals by American and European travelers and an increasing number of fossil bones managed to make their way back East and to Europe. By the end of the century, most scientists agreed

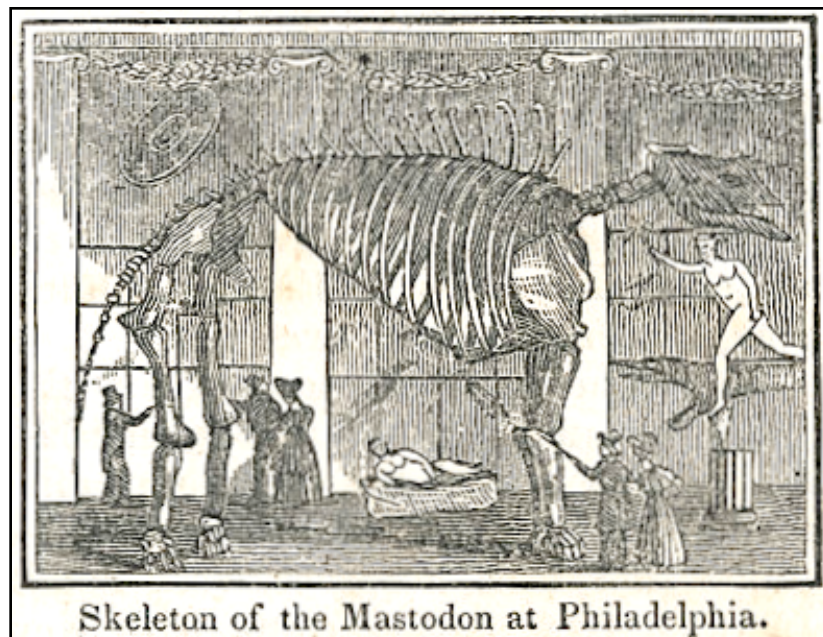


Figure 3. A crude 19th-century woodcut of the 1801 mastodon skeleton on display in Charles Wilson Peale's museum in Philadelphia.

that the larger of the fossil bones and tusks were the remains of a much larger cousin of the modern elephant (figures 3 and 4), though it wasn't until 1806 that the famous French naturalist, Georges Cuvier, suggested the name "mastodon" for the new species.

The first nearly complete mastodon skeleton was assembled by the American naturalist and artist, Charles Wilson Peale, in 1801 for his museum in Philadelphia (recall figure 3) using bones found, not at Big Bone Lick, but rather two years earlier while digging marl fertilizer from a pit on a farm near Newburgh, New York. The nearly complete 11' by 15' skeleton was missing the top of the skull and the tip of the tail and, for some reason, Peale did not include the tusks.

Meanwhile Goforth, at "great expense," had managed to collect nearly five tons of fossil bones at Big Bone Lick, the teeth alone filling a wagon that required four horses to draw it. According to Flexner, some of these made their way to the attic of Goforth's home

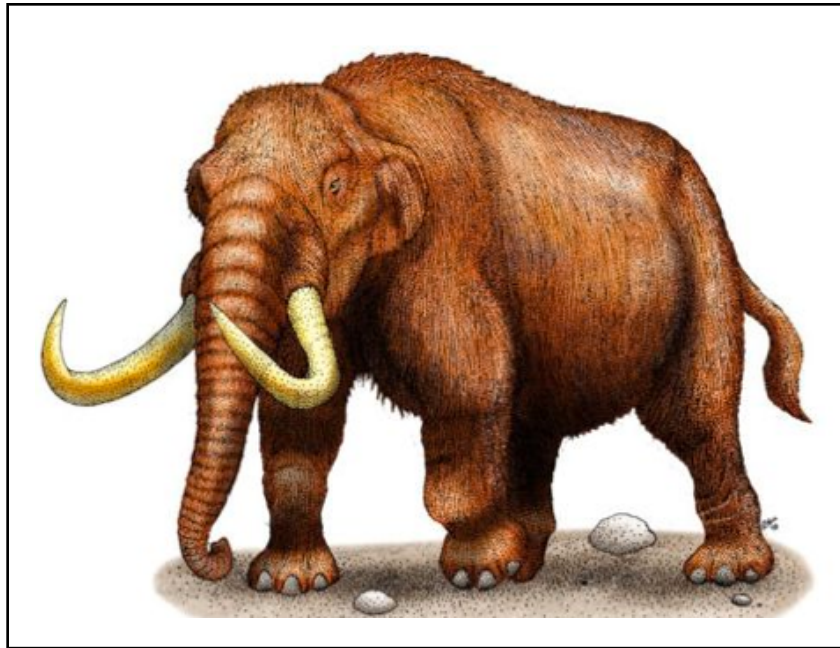


Figure 4. A modern reconstruction of a mastodon, thought to be as much as double the size of the present-day elephant.

in Cincinnati, but the vast majority remained on site at Big Bone Lick, or at least until they came to the attention of Thomas Jefferson.

The Bottom of the Mississippi River

In 1803 Jefferson (figure 5) was not only serving his first term as President of the United States, he was also serving as President of the American Philosophical Society. In this latter role he had become interested in the mastodon as a result of his attempt, in his *Notes on the State of Virginia*, to refute the claims of the French naturalist, George Louis LeClerc de Buffon, that the harsh climate of the North America could only support “weak and degenerate” fauna (5). Though one would think that a buffalo or elk should have sufficed, Jefferson insisted that the mastodon was the best counter-example, provided that it could be shown that it was still alive and roaming the wilds of the

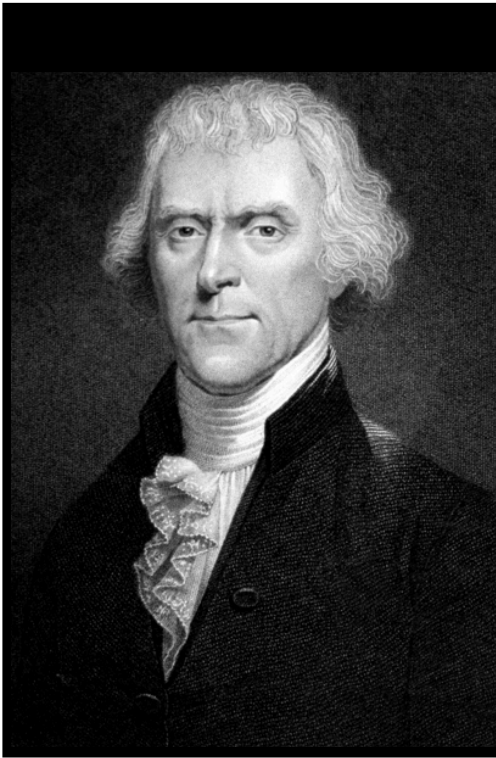


Figure 5. Thomas Jefferson
(1743-1826)

American far west.

The opportunity to test this hypothesis presented itself later in 1803 with the completion of the Louisiana Purchase and the formation of the Lewis and Clark expedition, which was formally instructed by Jefferson to look for living mastodons in the newly acquired western territories. However, before joining Clark in Louisville to begin preparations for their departure from St. Louis in May of 1804, Jefferson also requested that Lewis (figure 6) should visit Goforth at Cincinnati to see if he might have found the missing pieces for Peale's mastodon skeleton.

The existence of Goforth's collections had been brought to Jefferson's attention by Peale himself and Lewis made his visit in October of 1803. The missing parts were not among the fossils that Goforth kept at Cincinnati and he was unsure of what parts were present in the much larger accumulations still at the Lick. As compensation, Goforth made Lewis a present of two fossil teeth and invited him to visit the rest of his collections at the Lick on his own to see what he could find. This he did the following day, but there was so much material to evaluate and so little time to do it, that he ended up just taking a large tusk, several more teeth, and a few other unspecified bones. These he dutifully sent down river to New Orleans to be shipped to Jefferson. However, at Natchez a boat accident con-

signed them to the bottom of the Mississippi River. Unfortunately this was destined to be only the opening chapter in the sad saga of Dr. Goforth's vanishing fossils.

The Thomas Ashe Scam

In 1806 a handsome and charming Irish conman by the name of Thomas Ashe (1770-1835) made an appearance in Cincinnati on what he described as "a scientific tour of the country for the explicit purpose of collecting fossils for exhibition in England." Having lost his inheritance

because of dissipation, Ashe had been forced to flee to America to avoid prosecution for fraud. In Cincinnati he presented himself as a Frenchman by the name of d'Arville and in this manner ingratiated himself with Dr. Goforth. It seems highly probable that Ashe had explicitly marked Goforth as a target ahead of time as his pose played on both a knowledge that Goforth possessed a large quantity of fossils he was hoping to sell in Europe and a knowledge that he was highly susceptible to the charms of the French.

Goforth was delighted with his new acquaintance and gave him tours of the regions around Cincinnati, whilst Ashe faked an antiquarian's knowledge of everything from Indian inscriptions to the nature of the fossils in Goforth's attic. Among these was a large barrel containing an enormous fossil claw and associated bones. Though these almost certainly belonged to an extinct giant land sloth (figure 7), Ashe managed to concock a far more imaginative interpretation (2):



Figure 6. Meriwether Lewis
(1774-1809)



Figure 7. A 19th-century reconstruction of a giant land sloth. Note the claws.

He postulated the prehistoric existence of a gigantic lion or megalonys, sixty feet long and twenty-five feet tall. The ribs of this remarkable animal were constructed to shut up like an accordion; it could make itself small while waiting for its prey and, when it leapt, it opened up like a jack-in-the-box to spring a prodigious distance.

Eventually Ashe convinced Goforth to allow him to act as his agent for the disposal of his fossils in Europe and the two signed a contract to that effect. By then Goforth had shipped the fossils originally stored at the Lick upriver to a warehouse in Pittsburgh, where Ashe proceeded to collect them. He then accompanied them back downriver to Cincinnati, where he added in the fossils from Goforth's attic, and from there downriver to New Orleans. Here (4):

... he made a feint to sell them and was offered several thousand dollars for them. He observed that the sum was not one tenth of the value, and from New Orleans shipped them to London, where no doubt, he has accumulated an immense fortune by exhibiting that great treasure of curiosities to the court of that metropolis ...

The "treasure" in question consisted of ten crates of unassembled bones and, in fact, never made it to London and never made Ashe a

fortune. When he reached Liverpool, Ashe discovered that he could not afford to pay the customs duties and he was forced to sell the entire lot for £200 to a local “Museum of Natural Curiosities” run by a man named William Bullock, who also published a 60-page museum guide to the fossils prepared by Ashe. This naturally featured the giant claw and Ashe’s speculations concerning his so-called “accordion carnivore” (6). Needless to say, Ashe shared none of the proceeds of the sale with Goforth and the good doctor never heard from him again.

However, this wasn’t the end of Ashe’s impositions. In 1808 he published a three-volume description of his travels in the United States in which he claimed to have personally discovered many of Goforth’s fossils (7), and in 1811 he followed this with an attempt at a novel (8). Finally, in 1815 he published a three-volume set of “memoirs and confessions” in which, like Casanova before him, he described many of his so-called adventures, seductions, and cons (9).

The Final Fates of both the Bones and Dr. Goforth

And what of Goforth’s fossils? In 1809 Bullock closed his museum in Liverpool and moved most of its contents to London, where it was eventually housed in the famous Egyptian Hall in Piccadilly. As part of this move he appears to have disposed of Goforth’s fossils, either by giving them away, using them for barter, or selling them at auction, and in this manner they were dispersed and lost to history (4). Bullock also claimed that the giant claw was a fake that had been carved from the shoulder blade of an unknown animal, though this is at odds with the explanation given earlier. Ironically, in later life Bullock would immigrate to the United States and settle in Kentucky, directly across the river from Cincinnati, where he bought a large tract of land on the site of the present town of Ludlow, Kentucky, on which he hoped to build an utopian community named “Hygeia.” When this scheme failed,

he eventually sold the property and returned to England, where he died in 1849.

As for poor Dr. Goforth, in 1807 he became so enchanted with a party of French exiles passing through Cincinnati that he decided to accompany them downriver to New Orleans. There he was elected as a parish judge, served as a surgeon to Jackson's troops during the Battle of New Orleans, and was elected to the assembly charged with writing the state constitution for Louisiana.

However, by 1816 he was thoroughly disillusioned with his new home, declaring that New Orleans "was a hell on earth." Consequently, that year he began his journey back upstream to Cincinnati, which, in those days before steam boats were common, took an incredible eight months! Unhappily he died the following spring at age 51 of hepatitis contracted during his arduous trip north. He was originally buried in the Pioneer Cemetery in Columbia, Ohio. However, in 1854 his remains, and those of his parents, were transferred to Spring Grove Cemetery and reburied as part of the family monument (figure 8) for General John Stites Gano, the husband of Goforth's younger sister Mary.



Figure 8. William Goforth's final resting place as part of the family memorial for his brother-in-law, General John Stites Gano, in Cincinnati's Spring Grove Cemetery.

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II

Captain Symmes & the Hollow Earth

or the Case of the Concentric Spheres

Perhaps Cincinnati's best known crank was Captain John Cleves Symmes (figure 1) and his theory of the hollow earth. Though both Symmes and his theory are the subject of an extensive secondary literature (1), this volume would be incomplete without a short resumé of both his life and his beliefs.

A Brief Biographical Overview

John Cleves Symmes was born on 05 November 1780 in Sussex County, New Jersey, the son of Thomas Symmes and Mercy Harker (2). He was named after his paternal uncle, Judge John Cleves Symmes, who had been a delegate to the Continental Congress, a Colonel in the Revolutionary War, Chief Justice of New Jersey, and one of the founders of the City of Cincinnati. In 1802 he enlisted in the United States Army with the rank of Ensign, receiving



Figure 1. Captain John Cleves Symmes (1780-1829), not to be confused with his uncle of the same name, Judge John Cleves Symmes (1742-1814). A charcoal sketch made by James Audubon for the Western Museum of Cincinnati, probably in the summer of 1820. Note the large globe in the background with the hole at the top.

promotion to Second Lieutenant in 1804 and First Lieutenant in 1807. That same year, while stationed at a garrison near Natchez, Mississippi, he fought a duel with a fellow officer that left him with a permanent stiff left wrist. On Xmas day of 1808 he married a young army widow with six children named Mary Anne Lockwood and soon added five more of his own to the brood.

Near the end of the War of 1812, Symmes was transferred to the Great Lakes Region, where he won distinction at the battles of Lundy's Lane and Fort Erie, as well as promotion to the rank of Senior Regimental Captain. In 1815 he resigned from the army and, having obtained a government license to sell private supplies to troops and Indians, moved to St. Louis to set up a trading post. It was here, in 1818, that he first announced his theory of the hollow earth to the world in the form of a short flyer or circular which he mailed to 500 newspapers, scientific societies, and prominent scientists throughout the United States and Europe.

When his business venture at St. Louis collapsed in 1819, Symmes moved his large family to Covington, Kentucky, directly across the river from Cincinnati and, a few months later, to Cincinnati itself, where he resided in a three-story brick row house on lower Market Street between Broadway and Sycamore (3). He later moved to Newport, Kentucky, also across the river from Cincinnati and, finally, in 1824 to Hamilton, Ohio, about 35 miles northwest of Cincinnati, where he died in 1829 at age 49.

The Hollow Earth

As it turns out, there is a long history of speculation on the subject of a hollow earth extending back at least to the 17th century (4). However, Symmes appears to have been blissfully ignorant of his predecessors and to have arrived at his variation of these theories as a

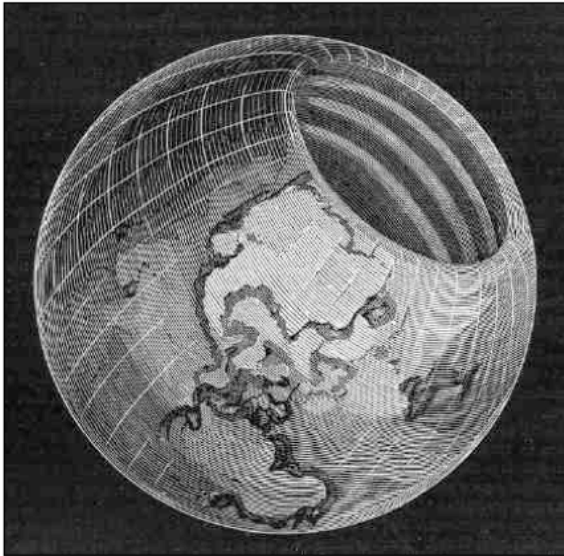


Figure 2. A visualization of Symmes' model of the hollow earth as seen from the north pole.

result of observing the rings of saturn through a telescope. This convinced him that Nature preferred to construct everything from planets to molecules using the principle of hollow concentric spheres in order to conserve on material. In the case of the earth itself, he postulated five such concentric spheres, of which the outermost surface was the fifth and largest (figure 2). Like the outermost sphere, each of the four inner

spheres was inhabited by living organisms (on both their exterior and interior surfaces) and each was exposed to the atmosphere and to the heat and light of the sun by means of large openings located near the poles of the spheres immediately above them (figure 3). In the case of the outermost surface these holes (often called Symmes holes) were several thousand miles in diameter and were located near the north and south poles respectively.

When critics pointed out that Symmes' planetary model violated the known laws of mechanics, optics and magnetism, he predictably responded, as most cranks are wont to do, with his own personal set of *ad hoc* alternative physical laws designed to fit his theory perfectly. These became the subject of yet seven more numbered circulars, mailed, like the initial flyer, to various scientific organizations, scientists, and newspapers, such as the *Cincinnati National Intelligencer*.

He also disseminated his ideas by undertaking lecture tours. These began in 1820 with a lecture delivered to a large audience in Cin-

cinnati, and then fanned out in ever larger circles (no pun intended), starting first with regional locations, such as Lexington and Frankfort, Kentucky; Zanesville and Hamilton, Ohio, etc.; followed by Philadelphia, New York City, Massachusetts, Maine, and, finally, Canada. As a visual aid he employed specially altered globes, with openings cut in the right places (recall figure 1), of which at least one example still exists (figure 4). We also have a fair idea of the content of these lectures because a detailed set of notes was taken by a student named P. Clark when Symmes lectured at Union College in 1827 (5).

Though Symmes himself never saw fit to write a book-length exposition of his theory, several of his followers did. The first of these, entitled *Symmes's Theory of Concentric Spheres; Demonstrating that the Earth is Hollow, Habitable Within, and Widely Open about the Poles*, was published in Cincinnati in 1826 and was written by a wealthy resident of Hamilton, Ohio, and a trustee of Miami University by the name of James McBride (6). This has caused some to speculate that McBride may have also played a role in convincing Symmes to move to Hamilton two years earlier, though in fact this was more likely prompted by Symmes having inherited a farm there. The second volume was not

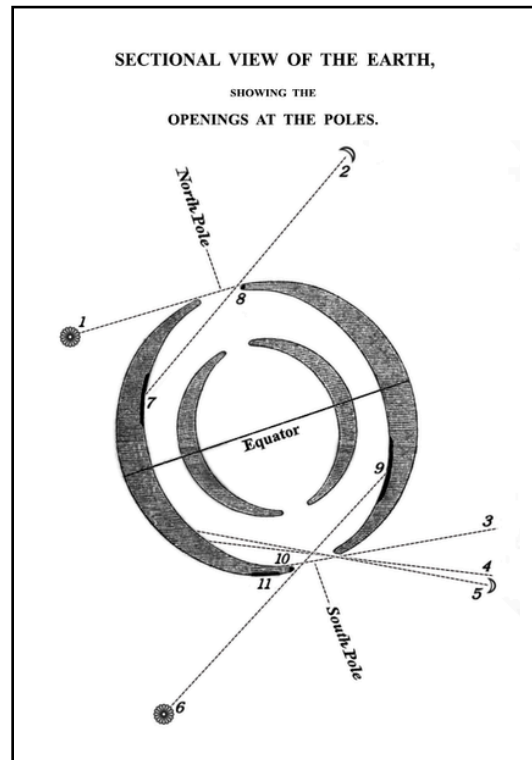


Figure 3. A cross-section of a much simplified model of the hollow earth with a single inner sphere that appeared in the satirical novel *Symzonia* (7). Note the alignment of the polar holes



Figure 4. One of the modified globes used by Symmes during his lecture tours showing the Symmes hole at the top, now on display at Drexel University.

published until 1878, and thus long after Symmes' death, by his son, Americus Vesputius Symmes, under the even more prolix, if unoriginal, title of *The Symmes Theory of Concentric Spheres; Demonstr-ating that the Earth is Hollow, Habitable Within, and Widely Open about the Poles. Compiled by Americus Symmes from the Writings of His Father, Capt. John Cleves Symmes* (7).

Pestering Congress

Though most mainstream scientists dismissed Symmes as a crackpot and his theory as nonsense, the same, alas, cannot be said of the general public and politicians of his time. Anxious to prove his theory, in his initial flyer Symmes had called for the patronage of the prominent scientists Samuel Mitchell, Sir Humphry Davy, and Alexander von Humboldt, and for:

... one hundred brave companions, well equipped, to start from Siberia in the fall season, with reindeer and sledges on the ice of the frozen sea. I engage we find a warm and rich land, stocked with thrifty vegetables and animals, if not men, on reaching one degree northward of latitude 82. We will return in the succeeding spring.

When this appeal received no response, Symmes decided to lobby congress for federal support of his proposed expedition. After his

move to Newport, he succeeded in pressuring Congressman Richard M. Johnson of Kentucky, who had served as Vice President of the United States under Martin Van Buren, into presenting his proposal – now elaborated to include a request for “two vessels of two hundred and fifty or three hundred tons’ burden” – to congress, which Johnson did in March of 1822. When congress refused to consider the matter, Symmes then got his supporters, most of whom he had won to his cause through his numerous popular lectures, to deluge both Representatives and Senators with petitions demanding that they act on the proposed expedition.

Bowing to public pressure, Johnson once more introduced the measure in January of 1823. This time it got as far as a recommendation that it be sent to committee for study, but no one could agree on which committee and so it died of inertia. This only caused Symmes to redouble his efforts and once again, after being deluged with yet more petitions, the proposal was placed before congress, this time by Senator Benjamin Ruggles of Ohio, but was voted down, though gleaning 25 votes in its favor.

Changing tactics, Symmes now decided to collect money on his own to finance a private expedition. To start his fund drive, a benefit in his honor was held on 29 March 1824 in the Cincinnati Theater featuring a performance of “Young’s tragedy of Revenge” performed by the Newport Thespian Society, with Symmes’ son Americus in a leading role. This was followed by the reading of an heroic poem written for the occasion by one Moses Brooks that concluded with the lines (3):

*Has not Columbus one aspiring son,
By whom the unfading laurel may be won?
Yes! History’s pen may yet inscribe the name
Of SYMMES to grace the future scroll of fame.*

But despite this auspicious beginning, Symmes' later attempts to raise private funding seem to have been largely unsuccessful.

However, shortly before his death, a disciple by the name of Jeremiah N. Reynolds appears to have had better luck. Launching a lecture tour of his own, Reynolds soon collected a sizable amount of money, after which he traveled to Washington to convince President John Quincy Adams of the plan. Adams supposedly approved of the expedition, but before it could be put into effect, Adams was replaced by President Andrew Jackson, who considered the proposal to be nonsense and promptly cancelled it.

At this juncture a New York physician named Watson, enamored of Symmes' theory, offered to finance the expedition on his own. Thus in October of 1829 two ships, named the *Annawan* and the *Seraph*, set sail for the south pole in search of its *Symmes* hole, with Reynolds aboard the former ship as the senior scientist. However, as the ships neared the southern ice sheets, the crews mutinied and the ships were forced to turn northward again, supposedly putting poor Reynolds ashore in Chile, where, after numerous adventures, culminating in a four-year circumnavigation of the globe aboard a frigate named *Potomac*, he eventually made his way back to the United States. There, in 1835, he published an account of his adventures under the ponderous title of the *Voyage of the United States Frigate Potomac Under the Command of Commodore John Downes During the Circumnavigation of the Globe in the Years 1831, 1832, 1833 and 1834* (8).

Final Resting Place

In 1829 Symmes became ill while lecturing in Canada and had to return home to Hamilton, where, as already noted, he died at age 49, exhausted by his futile attempts to convince the world of the truth of his theory. He was buried in a pioneer cemetery located on his fam-

ily's property that was later deeded to the city of Hamilton. However, in the 1840s the city, wishing to repurpose the property as a park, had all of the bodies, with the exception of Symmes himself, dug up and reburied elsewhere. Symmes was left behind to maintain the illusion that the property was still being used as a cemetery, as specified in the original deed, since the city feared that, if he was also removed, his heirs could argue that the city had violated the terms of the deed and the property would then revert back to them. Eventually Symmes' son, Americus, had an elaborate monument placed on the grave consisting of an eight-foot sandstone shaft with two commemorative inscriptions and a stone model of the hollow earth mounted on top (figures 5 and 6). These have since been further mounted on a modern concrete base with four attached brass plaques and the grave has now become something of a minor tourist attraction.



Figure 5. The Symmes monument in Hamilton, Ohio, as it appears today.



Figure 6. Closeup of the globe on the top of the Symmes monument.

Impact on Imaginative Literature

Though Symmes' theory never had an impact on mainstream science, it did have an impact on imaginative literature. As early as 1820 Symmes' theory was made the basis of a satirical novel entitled *Symzonia: Voyage of Discovery*, written by an anonymous author under the pseudonym of Captain Adam Seaborn (9). In both his 1831 short story "MS. Found in a Bottle," and in his 1838 novelette, *The Narrative of Arthur Gordon Pym* (10), Edgar Allen Poe makes use of the image of boats

being swallowed by an enormous whirlpool as they approach the south pole. However, there is little evidence that he got this idea from Symmes, as he uses giant whirlpools as a horror device in other stories as well, such as "A Descent into the Maelström."

There is little doubt, however, that Jules Verne was fully aware of Symmes and his theories. Thus, in his 1864 novel, *Journey to the Center of the Earth*, he has one of his characters exclaim, on discovering at the center of the earth a large central cavern containing a vast ocean (11):

Then I remembered the ideas of that English sea captain who had likened the earth to a huge hollow sphere. Inside the air pressure lit up the sky while two heavenly bodies, Pluto and Prosperine, went along their secret orbits. Could he have been right?

Admittedly, this is very oblique, not to mention inaccurate, since Symmes

was American rather than English, and was an army captain rather than a sea captain. Indeed, it seems to be based on the *Symzonia* spoof mentioned above rather than on any of Symmes' own writings, and intermixes his ideas with those of the Scottish physicist, Sir John Leslie (1766-1832), who postulated a hollow earth containing, not the concentric spheres of Symmes, but rather the two planets named in the quote. And, in any case, Verne's own version of the interior of the earth is very different from those of Symmes and his various predecessors.

But if there are still any doubts, one need only consult the novel, *The Voyages and Adventures of Captain Hatteras*, which Verne was writing about the same time as *Journey to the Center of the Earth*, but which was not published until 1866. This traces the adventures of an expedition to the north pole. As the expedition nears its destination, two of its American members have the following conversation (12):

“There is no point in the world which has given rise to more chimeras and hypotheses. The ancients, in their ignorance, placed the garden of the Hesperides there. In the Middle Ages it was supposed that the earth was upheld on axes placed at the poles, on which it revolved; but when comets were seen moving freely, that idea had to be given up. Later, there was a French astronomer, Bailly, who said that the lost people mentioned by Plato, the Atlantides, lived there. Finally, it has been asserted in our own time that there was an immense opening at the poles from which came the Northern Lights, and through which one could reach the inside of the earth; since in the hollow sphere two planets, Pluto and Proserpine, were said to move, and the air was luminous in consequence of the strong pressure it felt.”

“That has been maintained?” asked Altamont.

“Yes it has been written about seriously. Captain Symmes, a countryman of ours, proposed to Sir Humphry Davy, Humboldt, and Arago to undertake the voyage! But they declined.”

“And well they did.”

“I think so, Whatever it may be, you see, my friend, that the imagination has busied itself about the Pole, and that sooner or later we must come to the reality.”

Though Verne once again conflates the ideas of Leslie with those of Symmes, he was obviously aware that Symmes did indeed explicitly solicit the support of both Humphry Davy and Alexander von Humboldt in his initial flyer, and these same two scientists top Verne’s imaginary list of Professor Lidenbrock’s scientific colleagues in *Voyage to the Center of the Earth*.

It is also true that Symmes believed that the northern lights or *aurora borealis* were due to light escaping from the inner spheres via the polar openings on the earth’s surface. This is of some interest given the rationale that Verne provides for the source of the mysterious light that his explorers encounter on entering the large central cavern at the center of the earth (11):

The illuminating power of this light source, its vibrant coverage, its crisp white clarity, the fact that it wasn’t much warmer than the air, and the reality that it shone more brightly than lunar light all clearly implied that it had an electrical origin. It was like an aurora borealis, an ongoing cosmic phenomenon, and it filled up a cavern that was spacious enough to hold an ocean.

Verne was not the last writer of fiction to make use of the hollow earth idea. Often overlooked is its use by the Cincinnati pharmacist, John Uri Lloyd, in his 1895 novel *Etidorhpa or the End of the Earth* (13, 14), though Lloyd appears to have taken most of his cues from Verne rather than from Symmes, despite their common Cincinnati link.

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4. See Standish in reference 1.

5. Clark finally summarized his impressions of Symmes' lectures in an article published in the *Atlantic Monthly* in 1873. The Union College referred to was in Kentucky and is now defunct and not to be confused with the current college of identical name.

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9. A. Seaborn, *Symzonia: Voyage of Discovery*, Seymore: New York, NY, 1820.

10. E. A. Poe, *The Narrative of Arthur Gordon Pym*, Harper: New York, NY, 1838.

11. J. Verne, *Voyage au centre de la terre*, Hetzel: Paris, 1864.

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13. J. U. Lloyd, *Etidorhpa or the End of the Earth*, Clarke: Cincinnati, OH, 1895.

14. Yet more recent novels making reference to Symmes and his theory include: *Symmes Hole* (I. Weddes, 1987), *Our Plague* (J. Chapman, 1993), *The Hollow Earth* (R. Rucker, 1990), *The Map of the Sky* (F. J. Palma, 2012), and *The Syme Papers* (B. Markovits, 2004).

III

The Brief Encounter Between Dr. King and Dr. Drake

or the Case of the Barking Gurus

Early 19th-century American medicine wasn't exactly known for the quality of its standards. Many physicians had little more training than a two-year apprenticeship with an older, established, doctor and, on the margins of the ever-expanding western frontier, often not even that. There was no officially established and regulated system of medicine, but rather several competing schools of thought, ranging from self-appointed herbalists and homeopaths, through allopaths, galvanotherapists, Thomsonians, and assorted followers of Eclecticism (1).

Obviously this situation left the field wide open for the propagation of medical quacks (2) and patent medicine or snake-oil salesmen alike (3). In the early decades of the century a prime example of the former breed, by the name of Dr. King, made a brief appearance in Cincinnati, though, on second thought, he seems to have been closer to a cross between a faith



Figure 1. An example of the early 19th-century western concept of how people from the “mysterious orient” supposedly dressed and of the type of costume affected by Dr. King. This example depicts the dress of a famous mechanical “Turkish” chess player that was touring the country at the time.

healer and an astrologer.

Enter Dr. King

At some point, probably in the 1820s, a printed circular appeared in Cincinnati announcing the arrival in town of one Dr. Trophthenidem King (4):

King, the Prophet!
King, the Wise Man!
King, Who never Dies!
King, King, King!

Humble ones, my mission calls me among you. The Great Book, on being opened, announces my coming. Your pains, sufferings, and sorrows shall cease. Dr. King can look back through a vista of 3000 years and trace his descent from a continuous line of great physicians. Wherever he has been, the blind have been restored to sight, the lame walked, the heart-broken made happy. More than a million of people, afflicted with every ill that flesh is heir to, have applied to him for relief during the past ten years, and in every instance has a permanent cure been effected. Come, behold, see for yourselves, and watch the hand of Fate as it points you out the course to follow.

To this list of questionable claims was added a curious addendum as to when King was available to the public for consultation in Room No. 6 at the Columbian Inn (4):

Dr. King cannot attend to any calls after sundown as he is then engaged until morning dawn in consulting the stars and planets as to the proper treatment of his patients on the following day.

To complete his persona, King wore a turban (figure 1), claimed to be a native of “farther” India, and, at times, would speak in an absurd gibberish that he insisted was the tongue of his native country.

In short, King was the personification of Charles Dickens’ criterion for pulling a successful con (5):

... it is only necessary to invest anything, however absurd, with an air of mystery in order to give it a secret charm and power of attraction, which people are unable to resist. False prophets, false priests, false doctors, false prodigies of whatever kind, veiling their proceedings in mystery, have always addressed themselves, at an enormous advantage, to the popular credulity, and have been, perhaps, more indebted to that resource in gaining and keeping for a time the upper hand of Truth and Common Sense, than any half dozen items in the whole catalog of imposture.

The Confrontation

Needless to say, King had little trouble impressing the yokels of Cincinnati and was initially so successful that, in a fit of arrogance, he challenged the physicians in town to a public debate on the relative merits of their competing systems of medicine – a call to arms that was enthusiastically answered by Cincinnati’s most famous doctor, the ever combative Daniel Drake (figure 2).

Luckily Drake anticipated that one of King’s tactics would be to try and humiliate him by pointing out his own superior command of several languages, so in preparation Drake paid a well-known Cincinnati prankster to dress up like King, turban and all. When King raised the issue of language, Drake confessed that it was true that he did not understand the good doctor’s native tongue, but he knew one of the doctor’s fellow countrymen, named Fredora, who did, and

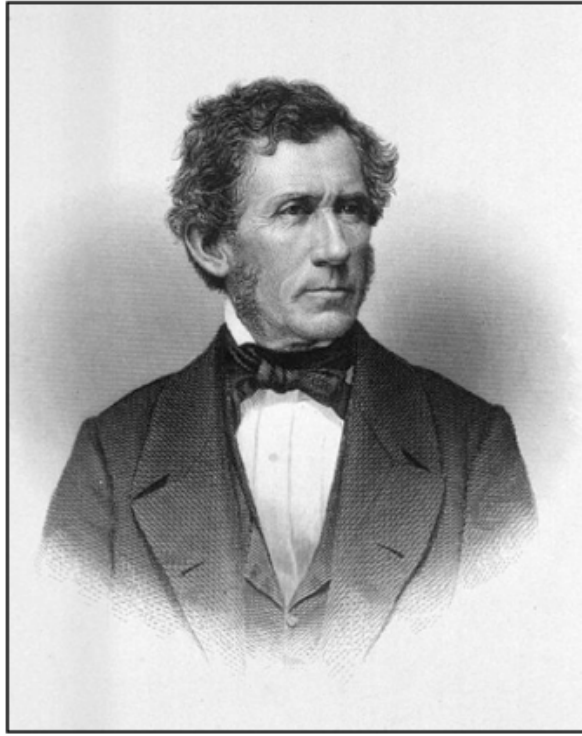


Figure 2. Dr. Daniel Drake (1785 -1852)
in later life.

would be glad to act as an interpreter, whereupon he introduced his paid confederate, who embraced King warmly and began talking to him in barks and howls. The confused King, not wanting to give away his ruse, had no choice but to bark and howl in reply as though he had understood every word.

Since many in the audience recognized the local prankster, they now also quickly realized that King was a fake and soon got him to confess that, far from hailing from exotic India, he had, in fact, “recently graduated himself from tending a loom in a Philadelphia woolen mill,” after which he was “allowed to leave town without ceremony.”

References and Notes

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4. J. T. Flexner, *Doctors on Horseback: Pioneers of American Medicine*, Dover Books: New York, NY, 1968, pp. 174-175. Unfortunately Flexner provides insufficient documentation for me to trace the original source of the King story, or even to establish the exact date. However, my friend Owen Finsten has traced it to a series of reminiscences of old Cincinnati by an anonymous author writing under the pseudonym of "Old Man" that were published in the *Cincinnati Times* in 1867 and later reprinted in C. T. Greve, *Centennial History of Cincinnati and Representative Citizens*, Biographical Publishing Co: Chicago, IL, 1904, Chapter 25.

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IV

Joseph Dorfeuille and the Western Museum

or the Case of the Expedient Museum Curator

In 1820 Cincinnati, with a population of nearly ten thousand, was on the cusp of transitioning from a pioneer town to an established city and was in search of a cultural identity. Prominent in that search was the Cincinnati physician, Daniel Drake, who would organize, in rapid succession, a medical school (The Cincinnati Medical College), a school of higher education (Cincinnati College), and a natural history museum (The Western Museum), all three of which were envisioned in 1818, though not fully operational until



Figure 1. Joseph Dorfeuille (1791-1840), a small 3" oval painting on ivory with a pin mounted on the back. The colors reveal that he had blue eyes (1).

1820. The latter institution would quickly become associated with a number of interesting characters, including, in the words of a later historian, a “wandering French naturalist and showman of uncertain antecedents” by the name of Joseph Dorfeuille (figure 1). The evolution, or perhaps one should say the eventual “metamorphosis,” of this institution under Dorfeuille’s curatorship has much to tell us about

the fate of premature attempts at *haute culture* on the western frontier.

The Evasive Monsieur Dorfeuille

The operative word in the above quote is the adjective “uncertain,” as this is, without a doubt, an accurate description of what little is known of the early life of Dorfeuille. Thus, his various obituary notices claim that he was 49 at the time of his death in July of 1840, which would mean that he was born in 1791, yet his principal biographer, Elizabeth Kellogg, insisted that he was born in 1790 (2). Likewise, his widow would later claim that the true spelling of his surname was d’Orfeuille, that he was a French Count and the nephew of the Duchess d’Richelieu, and that he had travelled extensively in Europe and the Orient before immigrating to the United States. On the other hand, Kellogg, based on Dorfeuille’s fluent English and his consistent use of the anglicized version of his last name, suggests that he may have actually been born in the United States, most likely in New Orleans, as the Cincinnati historian, J. P. Foote, who knew him personally, would later describe him as a “zealous naturalist from Louisiana,” and his surviving scrapbook makes reference to a book he was planning to write on the insects of Louisiana (3, 4).

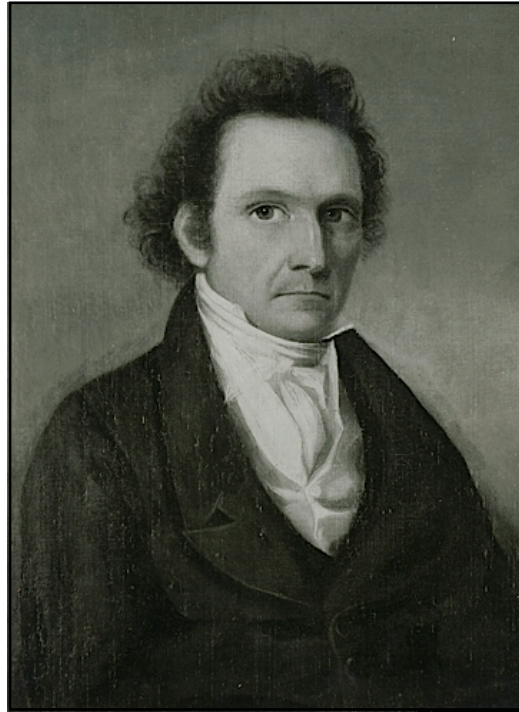
Also consistent with this latter speculation is a later statement by Dorfeuille himself claiming that he was collecting natural history specimens in Louisiana as early as 1808, which means that, if he was indeed an immigrant, he must of come to the United States at age 17, if not earlier, and leaves little time for the “extensive” travels in Europe and the Orient claimed by his widow, unless these were done as a minor in the company of one or both of his parents. Also consistent are surviving public records for New Orleans showing that numerous persons with the surname of Dorfeuille were living there in the early decades of the 19th century.

In any case, as a young adult, Dorfeuille seems to have indulged in the usual restless wandering from place to place so typical of 19th-century Americans, possibly spending time in the ill-fated French settlement of Gallipolis, Ohio, and, according to his surviving scrapbook, in St. Louis in the years 1817-1818. Foote claimed that the purpose of these travels was not only to augment his personal collections of plants, animals, and native American artifacts, but also to find a place to set up a permanent museum to house his collections. In fact, surviving court records for 1820 suggest that he had tried to do just that in New Orleans, but, being unable to pay his creditors, he was forced to flee to Cincinnati (5).

Once in Cincinnati, he gradually associated himself, as we will see in the next section, with the various naturalists and artists working in Drake's Western Museum, to which he would eventually donate his own collections as well, and he soon settled into the social life of his new home. Thus the local newspapers reported that in 1822 he gave a series of public lectures in support of the Greek revolt against the Ottoman Empire and, later that same year, an organ recital for the local Haydn Society. In 1824 he married a Cincinnati girl by the name of Jeanette Price Davis, by whom he would have four daughters, and the couple moved into a house on 3rd Street between Vine and Race (6).

Dorfeuille would remain in Cincinnati until 1839, when he moved to New York City. It was there that he would die the next year of consumption, on 23 July 1840, in the home of his brother-in-law in Brooklyn, where he is also buried. A few months after his death, his widow returned with her daughters to Cincinnati, where she was listed in the City Directories working as a teacher until 1858, when she presumably passed away. One of her daughters continued to be listed in the directory until 1867, after which the name of Dorfeuille vanishes from the annals of Cincinnati.

Figure 3. John Audubon (1785-1851) as a young man, a self-portrait.



The Western Museum

The museum in question was the project of an organization officially known as the Western Museum Society, first conceived in 1818, with Drake, Elijah Slack, Peyton Symmes, Jesse Embree, and William Steele as its officers, but not fully operational until July of 1819 (2, 7-10). That year, Drake hired Robert Best and John Audubon (figure 2) to prepare the museum's collections and displays, which were finally opened in a suite of "spacious rooms" located in the Cincinnati College building on the corner of Walnut and 4th Street (figure 3) in June of the following year. These included samples of metals, minerals, fossils, indigenous and extinct animals, as well as local Indian artifacts, and were intended not only for public exhibition but for the use of the professors at the college as "show and tell" in their classrooms. In addition to its displays, the museum also sponsored popular public lectures on science by Drake and Slack, who also taught chemistry at both the College and the Medical School.

By the end of 1820 Audubon had left the museum in order to collect bird specimens in Mississippi and points south, and by 1823 Best had done likewise – in his case in order to teach chemistry at Transylvania University in Lexington – whereupon care of the museum collections fell to Dorfeuille alone. These he seems to have greatly enlarged, and by 1827 a popular guidebook to Cincinnati was

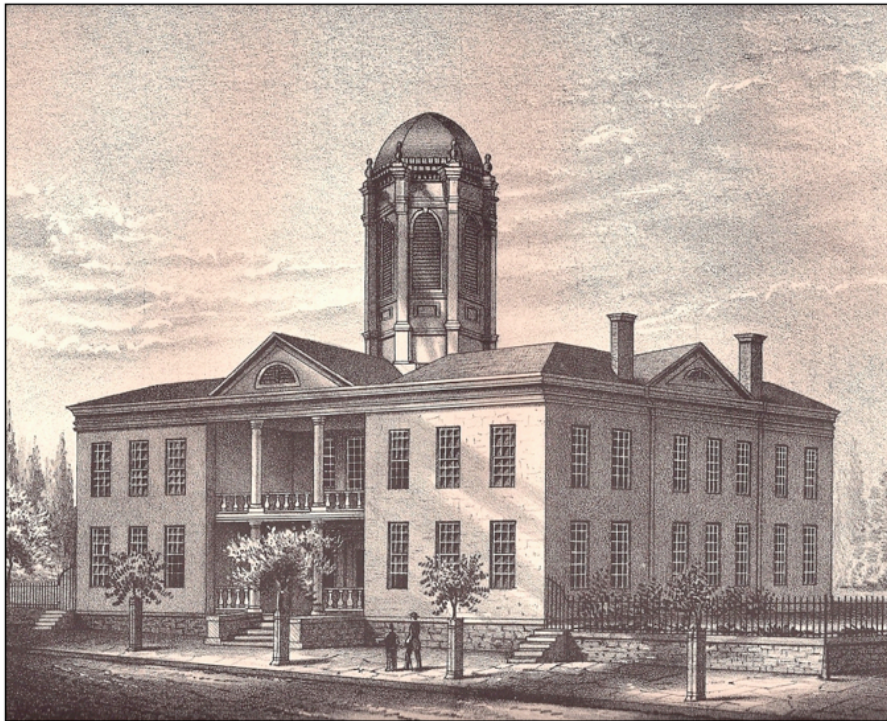


Figure 3. Cincinnati College. Located at the corner of Walnut and 4th Streets, the building was built for the Lancasterian Seminary in 1815 and further enlarged for the college in 1819. It consisted of two wings, one for male and one for female instruction, connected by a central set of hallways and stairways and a central dome that was originally intended to house an astronomical observatory but was never outfitted. The building was destroyed by fire in 1845. The Western Museum was housed in this building from 1820-1823.

reporting that the museum could boast of owning 100 mammoth and arctic elephant (i.e. mastodon) bones, 50 megalonyx (i.e. giant land sloth) bones, 33 stuffed quadrupeds, 500 stuffed birds, 200 stuffed fishes, 5000 invertebrates, 1000 fossils, 3500 minerals, 325 botanical specimens, 3125 medals, coins and tokens, 150 Egyptian and 215 Indian artifacts, 112 microscopic designs, several views of American scenery and buildings, about 500 specimens of fine art, an elephant “organ” (i.e. penis) and the head of a South Sea Island Chieftain “preserved and beautifully tattooed by the Cannibals of New Zea-



Figure 4. To the best of the author's knowledge there are no surviving images of the interior of the Western Museum of Cincinnati. However, this circa 1820 lithograph of the natural history collections in William Bullock's museum in Piccadilly London will give an idea of what these early 19th-century museums were like.

land" (figure 4) (11). Not explicitly mentioned were many beautiful hand-colored drawings of insects made by Dorceville himself, though perhaps these were subsumed under the "specimens of fine art."

This same booklet also reported that the principal sources of these items were the personal collections of Daniel Drake; Condy Raguet, who was serving as US Consul at Rio de Janeiro; and Dorceville himself, who had donated "his cabinet of Egyptian antiquities, foreign and domestic birds, and western amphibia." It also claimed that Dorceville had recently purchased the collections of the late John Clifford of Lexington for the museum and was sponsoring new excavations for fossil bones at nearby Big Bone Lick, Kentucky.

A Gradual Change in Direction

Further noted in this booklet was the fact that by 1827 the Western Museum had undergone a significant change in ownership. In 1823 the Trustees of the Western Museum Society, feeling they could no longer financially support the museum, attempted to sell off its collections, which may account for the departure of Best that year. When that failed, they gave them instead to Dorfeuille, with the proviso that they and their families would continue to enjoy free admission to the museum and its collections.

Either upon the collapse of Cincinnati College in 1825, or shortly after he was given ownership of the museum collections in 1823, Dorfeuille moved them into a building on the northwest corner of 2nd and Main Streets by the Public Landing and, finally, to rooms located on the third, fourth, and attic floors of a building on the southwest corner of Main and Pearl Streets, where he soon learned that the thirst of the citizens of Cincinnati for the marvels of natural history was strictly limited.

Truth be told, the fickle nature of the public's interest in science was apparent almost from the opening of the museum in 1820, when it was forced to compete with a purely commercial enterprise known as Letton's Museum, located in the second and third stories of a brick building on the corner of Main and 4th Streets (11). Begun in 1818, this museum, in addition to a rather more limited natural history collection, featured several far more eye-catching forms of entertainment, including tableaux of life-size wax figures of famous personages accompanied by organ music – similar no doubt to those later made popular by Madame Tussaud's famous museum in London – and a machine that could trace a patron's silhouette for a quarter.

Perhaps, in an attempt to compete with the latter attraction, as early as 1820 patrons of the Western Museum could have their portraits

drawn in charcoal for \$5.00 by John Audubon, though he had actually been hired by Drake as a taxidermist rather than as an artist. Whether this service was officially sanctioned by the museum or was a side venture on Audubon's part to supplement his meager wage, is not known. Several of these drawings have survived, including portraits of Elijah Slack and his wife, and of Captain John Cleves Symmes of hollow earth fame (recall the second chapter of this series).

After acquiring ownership of the museum, Dorfeuille, realizing that elephant pensises and the preserved heads of a South Sea Island Chieftains were no longer sufficient to draw repeat customers, finally acquired his own collection of wax figures and a pump organ. These were used to create a chamber of horrors depicting famous murders, and were accompanied by the display of what purported to be the actual blood-soaked murder weapons and the head of a real-life murderer named Hoover "swollen and distorted in a huge glass of alcohol." As early as 1824 he is also reported to have offered selected customers the opportunity of experiencing the sensations of breathing nitrous oxide or laughing gas. Yet other sources mention exhibits of pickled two-headed pigs, eight-legged lambs, and yet other examples of "things unnatural."

Enter Mrs Trollope

But even these new attractions had begun to fade by the time the English authoress-to-be, Francis Trollope, made her debut in Cincinnati in February of 1828, accompanied by three of her children and a young, destitute, French artist named Auguste Hervieu (figure 5). She was soon attracted to Dorfeuille's museum and – no doubt familiar with similar establishments back in England, and hoping to find employment for her poor French artist – she began suggesting to Dorfeuille possible themes for spectacular exhibits intended to in-



Figure 5. A period caricature of Francis (Fanny) Trollope (1780-1863) and her family visiting the Cincinnati studio of Auguste Hervieu (1794-1858). Mrs. Trollope and her two daughters are seated in the center, the model on the sawhorse is her son Henry, and Hervieu is shown working on his epic painting “Lafayette’s Landing and Reception at Cincinnati.” The two characters on the far right are unidentified.

crease both the numbers of his flagging clientele and the contents of his pocketbook (12).

The first of these was entitled *The Oracle or the Invisible Maiden* and featured eerie lighting filtered through painted “transparencies” by Hervieu intended to suggest a cave for the initiation of candidates into the “Egyptian Mysteries,” and behind which lurked wax figures depicting fierce banditti, Hecate and her weird sisters, and assorted spectral figures and curious animals used in magical rites. No more than twelve customers at a time were admitted to the display and each was free to address up to three questions apiece to the invisible girl or oracle, who would quickly answer, in any of seven different lang-

uages, from a speaking trumpet hidden in the artificial clouds suspended above the center of the exhibit.

The role of the disembodied girl was actually played by Mrs. Trollope's son, Henry, and the wax figures were the creation of a young man named Hiram Powers (figure 6). He had been hired by Dorfeuille the previous year to repair a shipment of recently purchased wax figures that had been damaged in transit, and he would go on to become one of the most celebrated American sculptors of his generation (13).

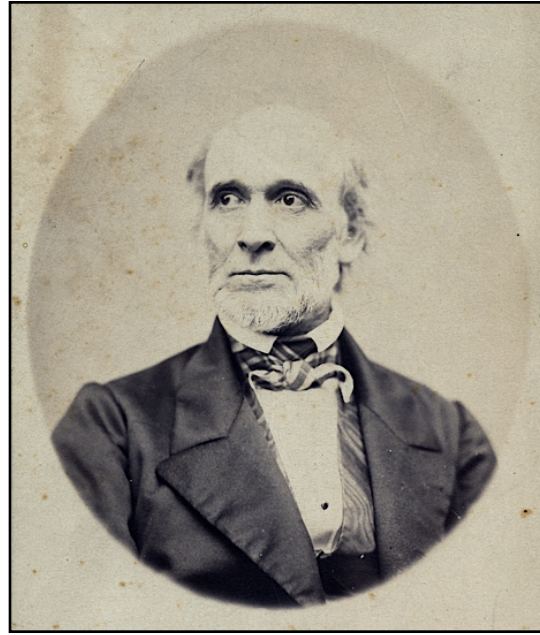


Figure 6. Hiram Powers (1805-1873) in later life.

Though a spectacular success during its eight-week run, the *Invisible Girl* would pale in comparison to the success of Mrs. Trollope's next suggestion – namely that Dorfeuille should recreate selected scenes from Dante's *Divine Comedy*. Once again Hervieu and Powers went to work. Though giving a passing nod to both *Paradise* and *Purgatory*, the real focus of their efforts was *Hell* and the resulting display, located in the museum's upper story or attic, soon became known in Cincinnati lore as *Dorfeuille's Hell* or *The Infernal Regions*. At its center was (12):

... the “grand colossal figure of Minos, the Judge of Hell” holding a two-pronged scepter. On his right appeared a frozen lake from which emerged the heads of doomed earthlings, including Ugolino, pictured “eternally gnawing the head of his enemy.” A “black imp” was “seated

on a rock dandling a young monster.” Throngs of condemned spirits “in all varieties of suffering” crowded about a fountain of flame in the midst of a frozen lake, and birds and animals of a hideous form and evil omen fluttered over the heads of the sufferers. On the left of Minos, a skeleton ascended a column of icicles, the bright surfaces of which glared red with the reflection of hell fire ... [There were] “unearthly sounds, horrid groans, and terrible shrieks” which seemed to be emitted “in every direction. At the moment when utter darkness prevails all the sufferers, imps, and monsters are heard shrieking together until the light returns ...”

The Infernal Regions was only open to the public after dark and, to make the entire thing even more frightening, Powers – who also had considerable mechanical and inventive skills and had served time in Lumen Watson’s watch and organ factory – used moving clockwork figures of his own design rather than static wax figures. To prevent overly excited customers from pawing the denizens of hell, the entire exhibit was placed behind an iron grating and, when that failed to stop the occasional outstretched arm, Dorfeuille had the grating electrified so as to give the transgressor a sharp electrical shock. Far from producing outrage, this added feature simply intensified the public’s enthusiasm.

After Dorfeuille’s departure for New York in 1839, his museum was ultimately acquired by one Frederick Franks, who had opened a competing establishment in 1828 on Front Street between Sycamore and Broadway that eventually featured its own version of *The Infernal Regions* called *Hell’s Regions*. However, in late March of 1840 Franks’ version burned down and, as a replacement, he was later forced to buy up the original along with the rest of the Western Museum, which he and his son would continue to operate for at least another 25 years. Cincinnati historian, William Venable, remembered visiting it as a boy

in the late 1840s (14) and the American humorist, Artemus Ward, who first saw it in 1861, was still willing to declare it “the best show in Cincinnati.” Interestingly, Dorfeuille and the Western Museum have recently served as the inspiration for a novel by Tamera Munte entitled *The Boy in the Museum* (15).

There is also a debate over whether the version of *The Infernal Regions* acquired by Franks was a replacement copy, the original having been taken by Dorfeuille to New York, where, for a while, he advertised an exhibit with the identical name in some rented rooms on Broadway that had once been occupied by Peale’s New York Museum (16). Unfortunately, these burned down a few months later and, as already noted, Dorfeuille himself would die not long after.

But What of Natural History?

With the success of *The Infernal Regions* any pretense on Dorfeuille’s part that he was running a natural history museum for the education of the public seems to have evaporated. Kellogg reports that in 1829 he unsuccessfully tried to sell portions of the museum’s fossil collections, first to the Academy of Natural Sciences in Philadelphia, and then to the American Philosophical Society (17). By 1833 he was in sufficient financial trouble that he was forced to mortgage the entire contents of the museum, including *The Infernal Regions*, to one Henry Avery for \$3500 (18), after first trying to once more unsuccessfully sell the natural history portions, this time along with a large collection of scientific books, to the recently organized Western Academy of Sciences in Cincinnati. Since there is no mention of the natural history collections in the advertisements for Dorfeuille’s short-lived extravaganza in New York, and Venable reported still seeing such exhibits when he visited the Western Museum in the late 1840s, Kellogg concluded that he must have left them behind when he finally

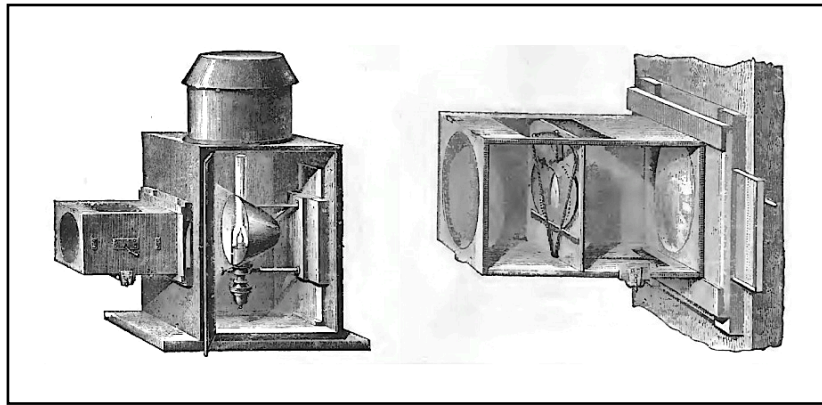


Figure 7. A typical 19th-century version of the “Fantoscope.”

succeeded in selling the Western Museum in 1839 to a group of investors for \$6500, and that their eventual fate, after the museum finally closed its doors over a quarter of a century later, remains unknown.

Of interest, however, is the fact that the advertisements for Dorfeuille’s short-lived New York venture, while failing to mention any natural history exhibits, do make mention of two recently acquired optical entertainments: the “Polymorphous Fantoscope” and the “Cosmorama.” The first of these was an early precursor of a carousel-like, glass-slide projector or magic lantern, patented in 1799 by the Belgian physicist, Étienne-Gaspard Robert, that allowed one to project more than one slide at a time or several in rapid succession (figure 7). Dorfeuille’s version “showed 27 different subjects, ranging from dancing cats to Cherubini, and from George Washington and a shrouded skeleton to Mrs. Siddons as Lady Macbeth.” The “Cosmorama” was a large semi-circular display containing several viewing ports, each of which showed a magnified and illuminated three-dimensional view of distant lands and exotic subjects. Dorfeuille’s version featured multiple scenes of the “conflagration of the National Theatre and French and African Churches.”



Figure 8. *Polygyra dorfeuilliana*.

The Failed Naturalist

In chronicling Dorfeuille’s gradual descent into P. T. Barnumism, one must not lose track of the fact that he was also a talented artist, naturalist, and archeologist. Mention has already been made of his delicate colored drawings of insects, no doubt intended to illustrate his unpublished book on the insects of Louisiana, and the Newbury Library in Chicago owns a similar set of his watercolor drawings of various Indian artifacts found in Indian Mounds throughout the Midwest, some dated “Cincinnati, 1837,” that were probably intended to illustrate a second book that he had written, entitled *Antiquities of America*. In a letter written in September of 1840 to Samuel Morton of the American Philosophical Society, Dorfeuille’s recent widow refers to this book, which she says will be issued in 33 installments and contain about 100 plates. Though she further claimed that the first installment was scheduled to be published in two weeks, this book, like the earlier volume on the insects of Louisiana, apparently never saw the light of day, as I could find no listing for it in the catalog for the Library of Congress.

Venable would later describe Dorfeuille as a “cyclopedia of popular knowledge, who gave didactic addresses on languages, books, birds, and I know not what besides” (14), and Mrs. Trollope would describe him as “a man of taste and science” (12). But, despite his learning and scholarship, in the end his only surviving contribution to natural history appears to have been a new species of land snail that was named, in his honor, *Polygyra dorfeuilliana* (figure 8), by Isaac Lea of the Academy of Natural Sciences of Philadelphia in 1838.

References and Notes

1. The internet indicates that the Pierpont Morgan Library owns a profile caricature of Dorfeuille by Hirman Powers, but this has apparently never been published.

2. E. R. Kellogg, "Joseph Dorfeuille and the Western Museum," *J. Cincinnati Soc. Nat. Hist.*, **1946**, *22(4)*, 3-29. This contains a great deal of poorly digested information on Dorfeuille which makes it, for lack of a proper organization, rather difficult reading. However, all biographical data, unless otherwise indicated, are from this source.

3. J. P. Foote, *The Schools of Cincinnati and Its Vicinity*, Bradley: Cincinnati, OH, 1855, p. 203.

4. The Cincinnati City Directory for 1825 lists Dorfeuille as being born in Pennsylvania. Though there are records of individuals with the surname Dorfeuille living in and around Philadelphia in the early decades of the 19th century, none of the dates seem to fit, and the New Orleans option seems more likely.

5 See the website *Stray Court Records - New Orleans Public Library* which lists "Docket No. 493, 1820, Jean Mercier versus Joseph Dorfeuille," for failure of the latter to paid the former for the construction of a counter for the museum bar. This was apparently but one of several suits against Dorfeuille for failure to pay his creditors.

6. Based on an 1834 letter between Dorfeuille and Thomas Say, Kellogg implies that, in addition to the museum, Dorfeuille also owned a type foundry in Cincinnati. However, no such foundry is listed in reference 11. Since Dorfeuille was a talented artist, what is being referred to is probably a type face designed by him for use in advertising his museum and cast specially for him by Wells' Type Foundry and Printers' Warehouse, located on Walnut between 3rd and 4th Streets.

7. W. B. Hendrickson, "The Western Museum Society of Cincinnati," *Sci. Month.*, **1946**, *63*, 66-72.

8. W. H. Venable, *Beginnings of Literary Culture in the Ohio Valley*, Clarke: Cincinnati, OH, 1891, pp. 310-315.

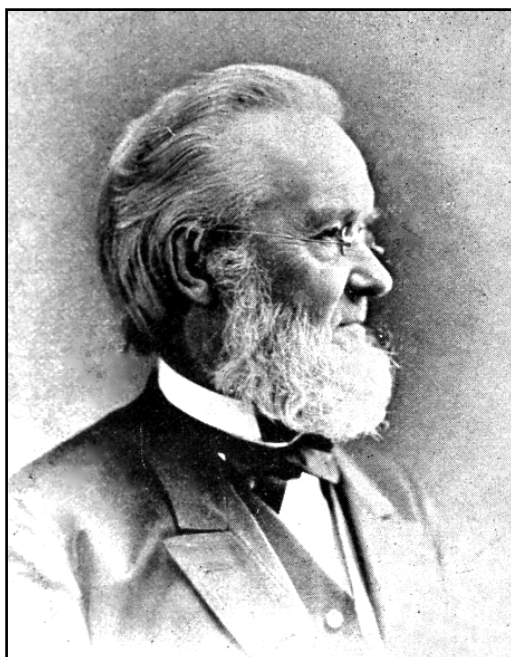
9. U. L. Baluk, *Proprietary Museums in Antebellum Cincinnati*, Ph.D Thesis, University of Toronto: Toronto, 2000. Available on line.
10. For a broader context for the Western Museum, see J. J. Orosz, *Curators and Culture: The Museum Movement in America, 1773-1870*, University of Alabama Press: Tuscaloosa, AL, 1990; and A. Stulman Dennett, *Weird and Wonderful, The Dime Museum in America*, New York University Press: New York, NY, 1997
11. B. Drake, E. D. Mansfield, *Cincinnati in 1826*, Morgen, Lodge & Fisher: Cincinnati, OH, 1827, pp. 44-46.
12. F. Trollope, *Domestic Manners of the Americans*, Knopf: New York, NY, 1949 (original edition 1832), pp. 62-63. See especially the introduction by Donald Smalley, pp. xxiv-xxxiv.
13. L. D. Ambrosini, R. A. G. Reynolds, *Hiram Powers, Genius in Marble*, Taft Art Museum: Cincinnati, OH, 2007.
14. W. H. Venable, *A Buckeye Boyhood*, Clarke: Cincinnati, 1911.
15. T. L. Munte, *The Boy in the Museum*, Tableaux: Erlanger, KY, 2014. The novel is predicated on the assertion that Dorfeuille, who is fictionalized as a character named Dorfoy, was also exhibiting human freaks at the museum. No mention of this is made in any of the historical accounts of the museum that I have read, though the author insists that she saw in an unnamed 1834 Cincinnati newspaper an ad for the display of a legless boy.
16. Kellogg cites Foote for the statement that Dorfeuille took the original *Infernal Regions* with him to New York, and also the fact the Cincinnati exhibit was temporarily closed in early 1838 for renovations by one Samuel Lee – the implication being that Lee was building the replacement whilst the original was being crated for shipment to New York.
17. Kellogg implies that neither sale was successful, whereas Orosz (reference 10) claims that the sale to the Academy of Natural Sciences of Philadelphia was finalized.
18. *The Ohio Law Reporter*, 1910, 7, 666.

V

Dr. Buchanan and the Science of Psychometry

or the Case of the Clairvoyant Geologist

The period from 1820-1860 saw a veritable flowering of pseudo-scientific and supernatural nonsense in the United States. Thus, in the field of medicine, this period saw the rise of mesmerism, homeopathy, hydropathy, galvanism, and phrenology, whereas in religion it saw the rise of Spiritualism, Mormonism, Millerism, and Campbellism. Utopian movements included Owenism, Fourierism, Brook Farm, the Oneida community, Transcendentalism, and the United Order, whereas social reform movements included Bloomerism, free love, temperance, abolitionism, feminism, vegetarianism, and abstinence. Much of the resulting social ferment and upheaval has been documented by past historians and period novelists, and I refer readers who are interested in the details to the titles listed in my references (1).



Dr. Joseph Rodes Buchanan
(1814-1899)

In addition to these major movements, there appeared, in the words of one historian, “several minor systems which were distinctive

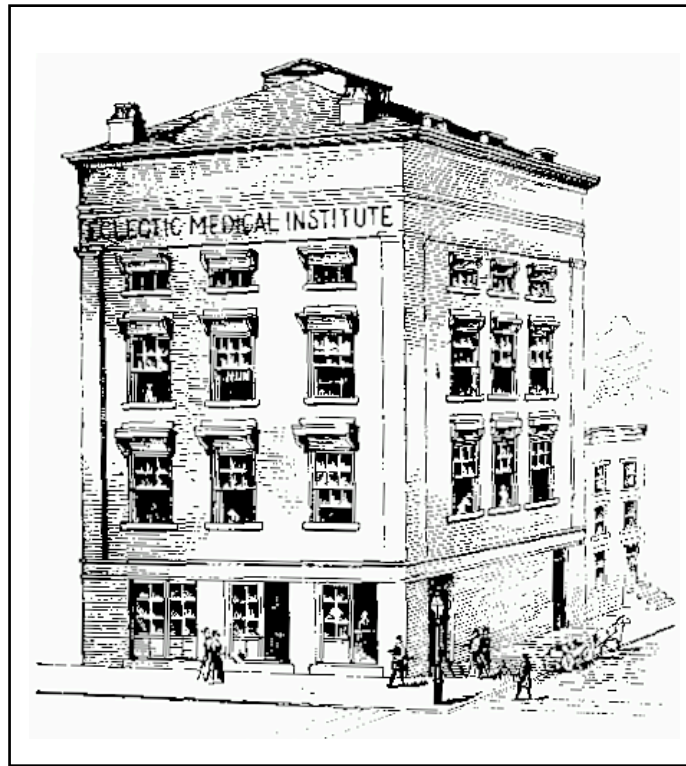


Figure 2. The new Cincinnati Eclectic Medical Institute on the northwest corner of Court and Plum Streets as it appeared in 1846.

by little else than variance in phraseology and intense jealousy among their several founders,” including “Etherology,” “Psychography,” “Odic Force,” and Cincinnati’s own unique contribution to this cultural malaise – “Psychometry.”

Dr. Buchanan

The latter was the creation of a local doctor and crank by the name of Joseph Rodes Buchanan (figure 1). Born in Frankfort, Kentucky, in 1814, Buchanan received his medical degree from the Louisville Medical College in 1842 (2, 3). Shortly afterwards he appears to have relocated to Cincinnati, where he first served as Professor of the

Institutes of Medicine and Diagnostics at the American Medical Institute on Fourth Street. However, around 1846 he transferred to the Eclectic Medical Institute of Cincinnati, which had just acquired a new building on the corner of Court and Plum Streets (figure 2), where he once again taught institutes of medicine, as well as physiology, and served as Dean from 1850-1856.

Even before receiving his medical degree Buchanan was thoroughly steeped in the pseudoscience fads of the day. In 1856 he published a 390-page book entitled *Outline of Lectures on the Neurological System of Anthropology as Discovered and Taught in 1841 and 1842* (4). This was divided into four sections dealing with phrenology, cerebral physiology, pathognomy, and sarcognomy, respectively. Buchanan was an obsessive coiner of new terminology and the latter three subjects appear to have been little more than relabeled versions of the ancient pseudoscience of “physiognomy,” that Bacon had aptly defined in the 17th century as “the discovery of the disposition of the mind in the lineaments of the body” (5).

As for the first subject, Buchanan was not content to use the phrenological system created by Gall and Spurzheim, but rather insisted on his own version, which located the phrenological organs on the face and neck, as well as the skull, and expanded their number from 32 to 166. Mimicking the magnetic fluids of Mesmer and the Odic Force of Reichenbach, he also insisted that the nerves of the body gave off an imponderable emanation that he called “nervaura.” This differed for each individual and for each body organ, could be transmitted from one individual to another via an iron bar and, in strong-minded persons, could also be broadcast through the air in order to impose their will on another or upon a large crowd. In 1849 Buchanan also began publishing his own monthly journal under the rather immodest title of *Buchanan’s Journal of Man*, whose purpose was largely to propagandize for his eccentric theories and to attack his opponents (6).

All of this may explain why Buchanan chose to join the Eclectic Medical Institute. As implied by the use of the adjective “eclectic,” this medical movement claimed to be undogmatic and to embrace any medical treatment from any source that might prove beneficial to a patient (3). Unhappily this liberal policy was also an open invitation to cranks and pseudoscience and Buchanan was quick to seize the opportunity to have his questionable views taught to a captive audience of medical students.

Though Juettner, in his history of the Cincinnati medical profession, described Buchanan as “a man of great ability” and as “a brilliant speaker when he was in the mood of speaking,” he also warned that (2):

He was a strange sort of man, reserved and dignified, leading a secluded life and wrapped up in weird and semi-mystical researches in anthropology, sarcognomy, psychometry, and occult subjects of a religious character. He was suspicious and restless and constantly at loggerheads with his colleagues.

These personality quirks soon led to predictable consequences once Buchanan became Dean of the Eclectic Medical Institute, as summarized by Haller (3):

A truculent man, Buchanan bullied his way into the deanship and ... set a course for the college that included the establishment of a chair of homeopathy, the incorporation of his neurological theories into the curriculum, implementation of a “free education” scheme that nearly bankrupted the college, and participation in feuds and schisms too numerous to count. Believing that strong punitive behavior was the best deterrent to malcontents, Buchanan carried out intemperate attacks on colleagues and students ... He accepted the privileges and

status of office, embraced irrevocable strategies, and preferred raw power to pragmatic wisdom or diplomacy.

By 1856 enough was enough and the faculty voted to expel Buchanan not only from the deanship but from the college as well. Though one suspects that his attempts to impose his questionable theories on others played a major role in his expulsion, the ostensible reason was the charge that he had embezzled “tuition dollars for his own personal use” (doubtless in order to pay for the self-publication of his journal and so-called textbook) and had “participated in a cabal intended to vote in a bogus board of trustees and issue new stock.”

The Origins of Psychometry

As already suggested, the best known of Buchanan’s many “psychic” discoveries was the so-called science of psychometry, which he claimed to have discovered in 1842 while still in medical school but which he did not announce to the world until 1849 in the first volume of his *Journal of Man* (7). This began with his observation that, if a particularly “sensitive person” touched an inanimate object, the nervaura in their finger tips would blend with the residual memories present in the object and reveal to that person the object’s inherent properties and its entire history. This was initially based on the ability to discriminate between various metals by the characteristic taste that the sensitive’s nervaura transmitted to the tongue. Buchanan’s belated decision to finally published this discovery was the direct result of new experiments he conducted in 1849 using students at the Electric Medical Institute in which they were asked to touch various drugs that had been wrapped in brown paper. Much to his delight, this usually induced the same physiological symptoms in the student as the drug would have produced when administered orally.



Figure 3. Cornelia H. Buchanan

Even more exciting was his further discovery that touching the autograph of a person allowed the sensitive to describe the writer's physical appearance and personality, usually by placing the autographed letter or paper on the sensitive's head in order to shorten the pathway for the necessary nervaura flow. It was this discovery that rapidly elevated psychometry into something of a social fad that soon began to compete with the conventional séance as parlor room entertainment. Apparently Buchanan himself seldom acted as the sensitive

in his various experiments, this role instead being increasingly played by his wife Cornelia (figures 3 and 4), especially after their later move to Boston (see below).

Enter William Denton

Yet a further extension of psychometry was made in 1853 by an Englishman named William Denton (figure 5). Born in Darlington, Yorkshire, in 1823, Denton immigrated to the United States around 1848, settling first in Cincinnati, where he may have come into contact with Buchanan. In any case, while there he married a local girl by the name of Elizabeth M. Foote and the couple moved to nearby

Dayton, where Denton operated a school and lectured on geology and natural history.

In 1849 Elizabeth read Buchanan's article on psychometry in his *Journal of Man* and the couple began experimenting with the new fad, with Elizabeth, like Cornelia Buchanan, acting as the sensitive. In 1853 it occurred to Denton that this new technique could be profitably applied to his favorite science of geology and he began placing various rock and mineral samples on Elizabeth's

head and recording her impressions of where they had been found and

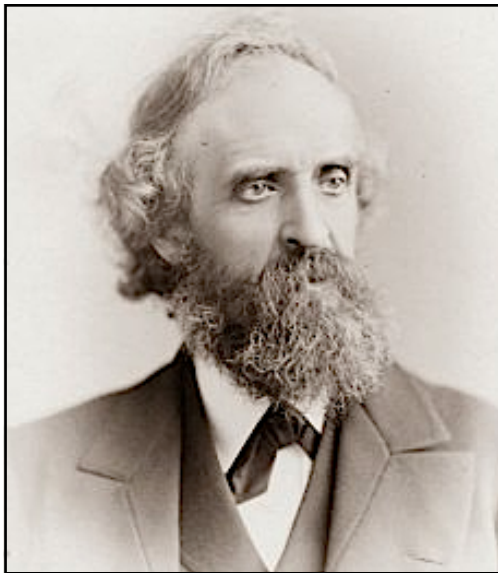


Figure 5. William Denton
(1823 -1883)



Figure 4. What appears to be a much younger Cornelia Buchanan performing a psychometric reading of a book.

of the various geological epochs they had witnessed. These were summarized in 1863 in a 366-page book entitled *The Soul of Things: Psychometric Experiments for Reliving History* (8), which was re-issued in 1873 as a much expanded, self-published, trilogy, now explicitly coauthored by Elizabeth (9).

In his 1863 book Denton also noted the potentially revolutionary impact that psychometry could have if applied to such fields as archeology, paleontology, crimin-

ology, and the evaluation of political candidates. Indeed, in 1905 a woman named Emma Bullene applied Denton's suggestions to the field of Southwest Indian archeology and summarized her findings in a book entitled *The Psychic History of the Cliff Dwellers* (10).

The Dentons later moved to Wellesley, MA, where they immersed themselves in various spiritualist and radical reform movements centered in nearby Boston and William began self-publishing a veritable deluge of books and pamphlets on psychometric discoveries in natural history, science, and spiritualism.

The Closing Chapters

William Denton passed away in 1883 at age 59 under questionable circumstances – one account claiming that he died of yellow fever while exploring the wilds of New Guinea and another that he was killed during the eruption of Krakatoa.

As for Buchanan, after his expulsion from the Eclectic Medical Institute of Cincinnati, he attempted to form a short-lived rival school called the Eclectic College of Medicine and Surgery at a location on Walnut Street between 5th and 6th Streets. When that failed, he moved to Louisville and ran for Congress. When that also failed, he moved to New York, where he briefly served as Professor of Physiology at the Eclectic Medical College of New York. He then moved to Boston, where he attempted to open a College of Therapeutics specializing in his personal medical and occult theories. While in Boston he also tried to unsuccessfully revive his long-defunct *Journal of Man* and published two massive volumes: *Manual of Psychometry: The Dawn of a New Civilization* (figure 6) and *Therapeutic Sarcognomy* (11, 12), describing the treatments in use at his new institute. During this same period he also issued several vitriolic pamphlets attacking attempts to regulate and reform the

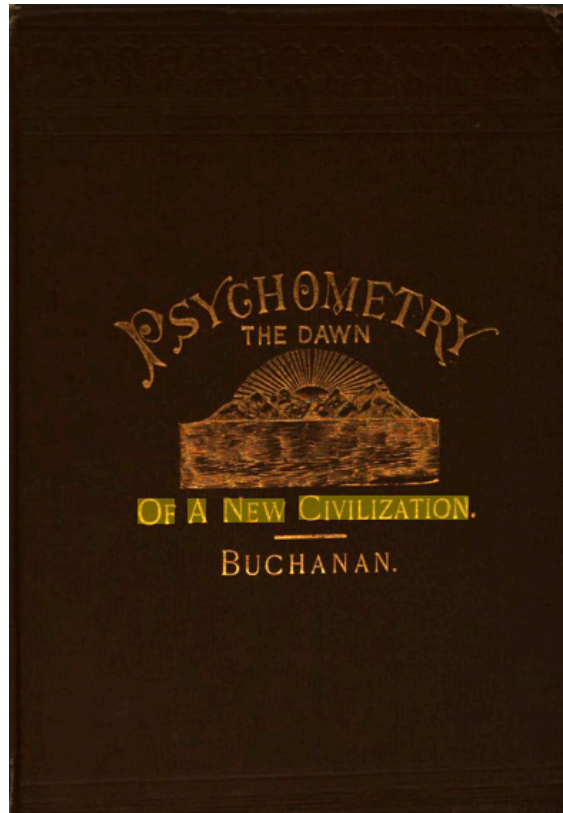


Figure 6. Front cover of Buchanan's 1889 book, *Manual of Psychometry: The Dawn of a New Civilization*.

medical profession, no doubt fearing that they could potentially endanger his alternative practice (13).

Eventually he ended up in California, where he published his final work, *Primitive Christianity* (14), and died in 1899 at age 85. Starting in Boston and continuing until his death, he and his wife apparently lived off the money that she earned doing psychometric readings, as his *Manual of Psychometry* mentions that these were available at two dollars a reading or at five dollars for “more elaborate opinions,” both being not inconsiderable sums at the time.

Psychometry was still common enough in the 1930s that the American psychologist, Joseph Jastrow, was willing to devote an

entire chapter to debunking it in his 1935 book, *Wish and Wisdom: Episodes in the Vagaries of Belief* (15). However, by 2000 it had faded sufficiently that it was not among the entries included in the massive *Encyclopedia of Pseudoscience* (16, 17).

References and Notes

1. I recommend the following three overviews: G. Adams, *The Mad Forties*, Harper: New York, NY, 1942; E. D. Branch, *The Sentimental Years, 1836-1860*, Appleton-Century: New York, NY, 1934; and O. A. Brownson, *The Spirit-Rapper*, Little, Brown: Boston, MA, 1854. The latter is a period novel which satirized many of the social and religious fads of the time, though in the end the author condemns them all as the work of Satan designed to lead men away from the true religion of Catholicism.
2. O. Juettner, *Daniel Drake and His Followers: Historical and Biographical Sketches*, Harvey: Cincinnati, OH, 1909, pp. 359-360.
3. J. S. Haller, *A Profile in Alternative Medicine: The Eclectic Medical College of Cincinnati, 1845-1942*, Kent State University Press: Kent, OH, 1999, pp. 30-31.
4. J. R. Buchanan, *Outline of Lectures on the Neurological System of Anthropology as Discovered and Taught in 1841 and 1842*, Buchanan's Journal of Man: Cincinnati, OH, 1856.
5. J. Jastrow, *Wish and Wisdom: Episodes in the Vagaries of Belief*, Appleton-Century: New York, NY, 1935, Chapter 20.
6. J. R. Buchanan, Ed., *Buchanan's Journal of Man*, 6 Vols., College Hall: Cincinnati, OH, 1849-1856.
7. J. R. Buchanan, "Psychometry," *Ibid.*, **1849**, 1, 49-62, 97-113, 145-156.
8. W. Denton, *The Soul of Things: Psychometric Experiments for Reliving History*, Walker & Wise: Boston, MA, 1863.
9. W. Denton, E. Denton, *The Soul of Things or Psychometric Researches and Discoveries*, 3 Vols., Denton: Wellesley, MA, 1873-1874.

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10. E. F. Bullene, *The Psychic History of the Cliff Dwellers*, Reed: Denver, CO, 1905.
11. J. R. Buchanan, *Manual of Psychometry: The Dawn of a New Civilization*, Cupples, Wilson & Co: Boston, MA, 1889.
12. J. R. Buchanan, *Therapeutic Sarcognomy*, Cupples: Boston, MA, 1891.
13. Example titles may be found in the catalog for the University of Cincinnati Libraries.
14. J. R. Buchanan, *Primitive Christianity*, 2 Vols., Buchanan: San Jose, CA, 1897-1898.
15. See reference 5, Chapter 24.
16. W. F. Williams, Ed., *Encyclopedia of Pseudoscience*, Facts on File: New York, NY, 2000.
17. Needless to say, however, psychometry, like so much other nonsense, is alive and well on the internet.

VI

The Genius of Henry Twitchell

or the Case of the Inventive Optician

With the possible exception of our immediate families and the two dates on our tombstones, most of us are destined to be lost to history. Such was almost the case with Henry Twitchell (1, 2). He is not mentioned in any of the standard histories of Cincinnati and had it not been for the donation of two of his inventions to the Oesper Collections by alert citizens of Cincinnati, who had found and preserved them, he would have never come to my personal attention and would not have become the subject of this brief essay.

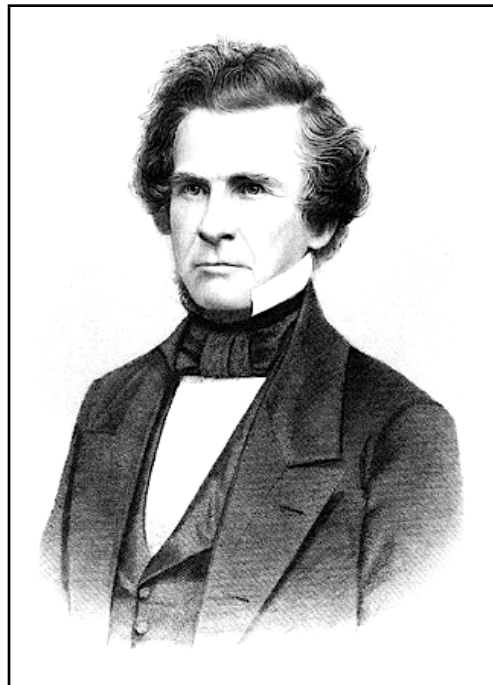


Figure 1. Ormsby Mitchel
(1810-1862)

The Twitchells of Cincinnati

Henry Twitchell was born in 1816 in Keene, New Hampshire. Though lacking a formal education, he appears to have displayed unusual mechanical skills at a young age. Nevertheless, he chose to spend his youth as a “roving sailor” and did not make an appearance in Cincinnati until 1846, when, at age 30, he “drifted aimlessly up from



Figure 2. The original Cincinnati Observatory on Mount Adams where Twitchell was employed from 1846-1861.

Florida.” Here he succeeded in attaching himself to Ormsby Mitchel (figure 1) at the recently (1843) completed Cincinnati Observatory on Mount Adams (figure 2), where he would play the role of a skilled and devoted, albeit underpaid, amateur astronomer, personal assistant, and jack of all trades (3). As a later historian summarized the situation (4):

On Mount Adams he found what he had searched for in every quarter of the globe. Bothered not at all, like [Mitchel], by his bodily needs, he swung his hammock in a tiny cottage on the grounds. He had the same long suffering endurance – an equal single-minded willingness – to lose himself, regardless, among the stars. His cunning hands, his mechanical instincts, all his skill and genius were called upon to satisfy the crying demands he was glad to serve.

In 1860 Mitchel left Cincinnati to head the Dudley Observatory in Albany, New York, leaving Twitchell behind as the Acting Director.

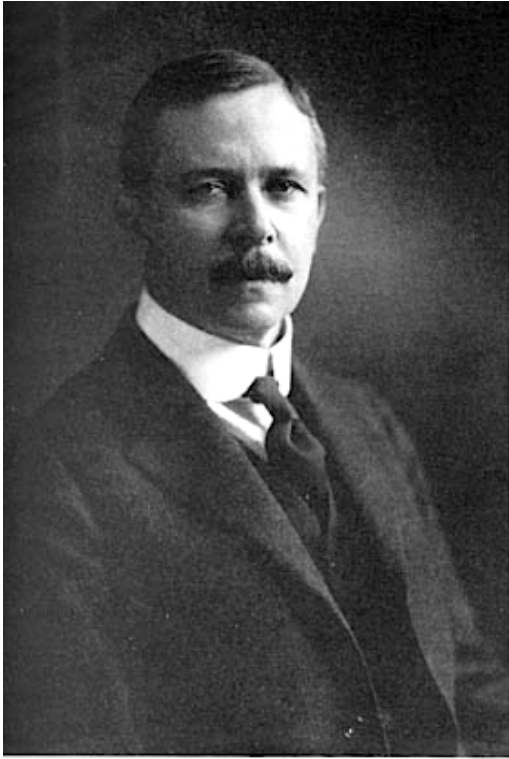


Figure 4. Ernest Twitchell
(1863-1929)

However, this apparent change in status was short-lived, as the outbreak of the Civil War soon put the operations of the Observatory on hold for the duration and Twitchell was forced to resign the directorship in 1861 (4).

While he had apparently remained content with his rather Spartan bachelor existence until the departure of Mitchel put an end to it, Henry now felt a need to establish a family and to obtain a more dependable source of employment. Though he was now well into his mid 40's, he married a recent German immigrant by the name of Caroline Jaup, who was nearly 26 years his junior,

and by 1870 was advertising himself as an optician with a shop on West 4th Street (figure 3). The couple would eventually have three sons: Ernest, George and Carl (5, 6).

Unfortunately Henry's untimely death of pneumonia in 1875, at age 59, would leave his young family in dire economic straits and force his widow to seek employment as an elementary school teacher. Though the eldest son, Ernest (figure 4), managed to graduate from the University of Cincinnati in 1886 with a B.S. degree in chemistry, the



Figure 3. The entry in the 1870 Cincinnati City Directory for Twitchell's store on west 4th Street.

two younger sons had to begin working as store clerks immediately upon finishing high school in order to help support their mother. Ernest would eventually become a prominent Cincinnati industrial chemist and Chemical Director of the Emery Candle Co. (7, 8). He would later be awarded the prestigious Perkin Medal of the American Chemical Society for his contributions to the industrial chemistry of soaps and fats (9) and would also endow the Twichell Fellowship in the Department of Chemistry of his *alma mater* – an act that was no doubt prompted by the University’s decision to award him an honorary doctoral degree in 1915.

The middle son, George (1865-1933), was able to eventually work his way through medical school, as well as earn a local reputation as a competent amateur paleontologist (10). Not to be outdone by his older brother, upon his death he would donate his extensive collection of fossils and microscopic slides of fossil cross-sections to the University’s Department of Geology.

Described by one historian as having no formal education, but as being “something of a mechanical and optical genius,” Henry would be credited with three inventions that we are aware of (see below): an acidometer, a novel hydrometer, and an early form of the chronograph for use in making transit measurements at the Observatory. A biographical account of his eldest son was even more eulogistic and would characterize Henry, not only as “an astronomer of superior rank,” but also as “a noted chemist” and “optician of the highest authority.” Whether these evaluations are reasonable or merely the hyperbole of a dutiful son is impossible to assess at present given the absence of unbiased independent testimony, but there is no doubt that Henry was, if nothing else, a noteworthy Cincinnati “character” who deserves to be rescued from the dust bin of history.



Figure 5. The Twitchell acidometer resting on top of its storage box. *From left to right:* the acidometer, the calibrated test tube for measuring out vinegar samples, and a small tin of potassium bicarbonate for charging the reaction spoon (Jensen-Thomas Apparatus Collection).

The Twitchell Acidometer

An example of Twitchell's first invention – his acidometer – was donated to the Oesper Collections in the History of Chemistry in 1998 (figure 5). As might be inferred from its name, it was designed to allow the owner to rapidly determine the acetic acid [$\text{H}(\text{C}_2\text{H}_3\text{O}_2)$] content or strength of commercial vinegar solutions. The label pasted

inside the lid of its wooden storage box – which happens to misspell Twitchell’s name (11) – reveals that the item in question was manufactured and sold locally by the Edward Berghausen Co. of 41 East Second Street in Cincinnati, which described itself as a manufacturer of (12):

... wine and cider vinegar flavors, oil of apple and oil of pears (for flavoring vinegars), essence of cider, and all kinds of flavoring extracts: raspberry, strawberry, grape, etc.; vinegar coloring guaranteed to work clear, can also be used for table sauce, mustard, chow chow, etc.

The label goes on to call the reader’s attention to:

... our vinegar and pickle preserving solution. It stops musty fermentation and prevents the pickles from becoming soft. A positive success that has stood the test for ten years.

As may be seen most clearly from the etching of the apparatus on

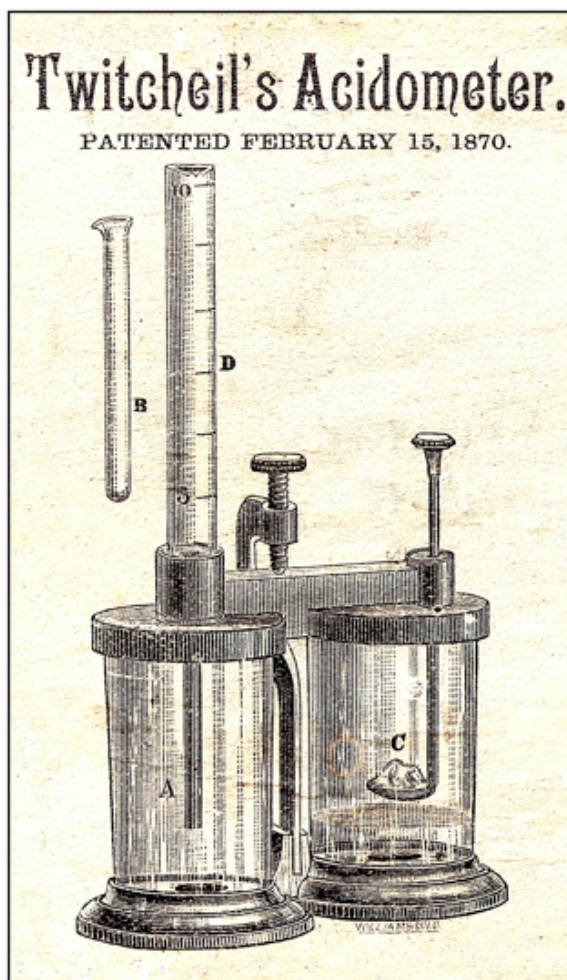


Figure 6. An etching of Twitchell’s acidometer found on the inside of the device’s storage box. Note the misspelling of his last name.

the label (figure 6), the acidometer consisted of two glass cups (A and C) resting on a brass stand. These were sealed on top by means of a brass cover held in place by a thumb screw and containing an internal channel connecting the two cups. This cover also held a graduated tube (D) located above cup A which was connected to a brass tube that extended almost to the bottom of the cup. Above cup C it held a copper spoon on a wire that could be raised or lowered within C via a self-sealing rubber gasket in the lid.

To use the apparatus, the cover was removed and cup A was filled with water. The graduated test tube B was filled with a fixed amount of the vinegar sample to be tested and this was, in turn, added to cup C, followed by a test tube of water to dilute it. The spoon was filled with finely powdered potassium bicarbonate [KH(CO₃)] and raised up to the cover, which was then clamped on top of the cups (13). Lowering the spoon into the vinegar sample allowed the acetic acid and potassium bicarbonate to react according to the equation:



On passing through the internal channel in the brass cover and into cup A, the evolved carbon dioxide (CO₂) gas would then push the water in A up into the graduated tube. The more acetic acid in the vinegar, the greater the volume of evolved CO₂ gas and the higher the level of the water in the tube, whose graduations allowed one to directly read off the percentage of acid in the original vinegar sample.

To the best of our knowledge, the acidometer was the only one of Twitchell's inventions that he considered important enough to patent, which he did in February of 1870 (14), and it was still being offered for sale by several laboratory supply houses well into the 20th century, along with a slightly modified version for testing the acidity of wine (15).



Figure 7. (Left): The closed (1.5" x 9") wine-bottle shaped maple case containing Twitchell's alcohol hydrometer. (Right): The case opened revealing Twitchell's (1.25" x 7.75") portable metal hydrometer for determining the alcohol content of wine and spirits.

The Twitchell Hydrometer

An example of Twitchell's second invention – his hydrometer – was first donated to the Oesper Collections in 2014. Designed to measure the alcohol content of wines and spirits, it came in a beautiful wooden maple container machined to resemble a miniature wine bottle (figure 7) with the name "H. Twitchell, Cincinnati," imprinted on the bottom. Unscrewing the top half of the container reveals a metal hydrometer with a conical float and a rectangular stem. On one face of the stem, near the bottom, is engraved "H. Twitchell Cin. O." and above it a scale that goes from 0-15. On the opposite face there is a scale that goes from 106-50.



Figure 8. Common hydrometers. (Left); A brass hydrometer jar with handle, thermometer, and two metal hydrometers, probably designed to monitor the fermentation of beer. The handle would facilitate scooping samples from the open beer vats. (Above): A selection of glass laboratory hydrometers and hydrometer jars (Jensen-Thomas Apparatus Collection).

A hydrometer is, of course, a device designed to measure the density or specific gravity of liquids (16). It is usually made of either glass or metal (figure 8) and consists of a weighted float or bulb with an attached graduated stem of some sort. When dropped in the liquid of interest (usually contained in a tall cylinder known as a hydrometer jar), it will sink to the depth at which the reading on its stem matches the density of the liquid in question. If one is working with a specific kind of liquid solution having variable composition, such as alcohol and water, the specific gravity of the solution is generally directly proportional to its concentration and the stem of the hydrometer can then be directly calibrated in concentration rather than density units. Indeed, hydrometers have been used to measure the concentration or proof of alcoholic spirits since the 17th century (17).



Figure 9. A damaged colored lithograph of the original Exposition Hall where the Cincinnati Industrial Exposition of 1870 was held. Made of wood, it was torn down a few years later and replaced with the current brick structure known as Springer or Music Hall.

Though of extremely high craftsmanship, there doesn't appear to be anything scientifically "novel" about the Twitchell hydrometer itself, and use of this adjective by contemporaries to describe the device apparently refers to the shape of its wooden container instead. This, at least, was the conclusion of *The Report of the General Committee of the Cincinnati Industrial Exposition*, which was held from 21 September to 22 October 1870 in the original Exposition Hall (figure 9), and to which Twitchell had submitted both his acidometer and hydrometer for display (18):

Nos. 640 and 641. Henry Twitchell exhibits two very useful instruments – an acidometer for wine and vinegar, and a hydrometer for testing the alcoholic strength of spirits. The acidometer is a very ready, neat, and convenient apparatus for determining the percent of

acid in wines and the percent of acetic acid in vinegar, with sufficient accuracy for the purposes of the wine-maker and dealer and the vinegar manufacturer. It is an inexpensive apparatus, not likely to get out of order, easily handled, and adapted to the intelligence of an ordinary workman. The hydrometer is a standard arrangement, well made, and accurate in its indications.

Both of Twitchell's submissions were awarded premiums by the prize committee.

Unlike the case of the acidometer, I have not come across any evidence that the Twitchell hydrometer was ever sold by standard laboratory supply houses, though one can assume that it was sold as a novelty item in Twitchell's optometry shop. Unhappily we can find neither a description nor a surviving example of Twitchell's third invention – his chronometer – which most likely preceded the above inventions, as it probably dates from his time at the Observatory (19).

Acknowledgements

I would like to thank John Ventre, historian for the Cincinnati Observatory, for his assistance in tracking down basic biographical data on Henry Twitchell and Dr. Richard Davis of the College of Mount St. Joseph for sharing his insights into the career of George B. Twitchell.

References and Notes

1. Based on W. B. Jensen, "The Twitchell Acidometer," *Museum Notes*, No. 20, May/June 2013; and W. B. Jensen, "The Twitchell Hydrometer," *Museum Notes*, No. 28, September/October, 2014. Both items are available on the web.

2. I have been unable to locate a portrait of Henry, though the Oesper Collections do contain several of his eldest son Ernest. Likewise no Twitchells are

listed in the current Cincinnati phone book, and thus presumably any direct male descendants no longer live in the Cincinnati area.

3. The original observatory on Mount Adams is not to be confused with the current Cincinnati Observatory in Mount Lookout, which dates from 1873.

4. M. Burress, "The Cincinnati Observatory." Manuscript copy on file in the Oesper Collections. Also *The Centenary of the Cincinnati Observatory*, Historical and Philosophical Society of Ohio: Cincinnati, OH, 1944, pp. 40-41, 42.

5. M. Burress, "The Henry and Caroline Jaup Twitchell Family: Early Home City Residents." Manuscript copy on file in the Oesper Collections. Home City roughly corresponds to the current Cincinnati suburb of Sayler Park.

6. A daughter named Susan was also born to the couple in 1871 but died in infancy.

7. M. B. Graff, "American Contemporaries: Ernest Twitchell," *J. Ind. Eng. Chem.*, **1929**, *21*, 607.

8. J. M. Cattell, J. Cattell, Eds, *American Men of Science*, Vol. 4, New Science Press: New York, NY, 1927, p. 1001.

9. C. F. Chandler, "Presentation Address on the Occasion of Award of the Perkin Medal to Ernest Twitchell," *J. Ind. Eng. Chem.*, **1917**, *9*(2), 193.

10. "Sigma Xi Memorial for George B. Twitchell." Manuscript on file in the Oesper Collections.

11. This curiously Germanic misspelling of Twitchell as Twitchell may well illustrate the pervasive German influence on the printing trade in Cincinnati in the last half of the 19th century. There is, however, no doubt that Henry Twitchell was indeed the inventor. He is credited with the acidometer in reference 7 and also on the Cincinnati Public Library's web page for Cincinnati inventors.

12. The Berghausen Company of Cincinnati was founded in 1863 and still exists, albeit now as an international corporation.

13. The quantity of $\text{KH}(\text{CO}_3)(\text{s})$ employed did not need to be exact since it was the acetic acid that was the limiting reagent in the reaction.

14. H. Twitchell, "Apparatus for Ascertaining the Amount of Acid in Liquids," US Patent No. 99976, 15 February 1870.

15. See for example, *Illustrated Catalogue and Price List of Chemical Apparatus*, Henry Heil Chemical Co: St. Louis, MO, 1904, p. 12, Item 1012; *Illustrated Catalogue of Assayers' and Chemists' Supplies and Scientific Apparatus*, Denver Fire Clay Co: Denver, CO, 1910, Items 101 and 102; *Illustrated Catalogue of Chemical Apparatus, Assay Goods, and Laboratory Supplies*, Amend & Eimer: New York, NY, 1912, p. 1, Item 2008. The average selling price was \$12.00.

16. A. D. Morrison-Low, "Hydrometer," in R. Bud, D. J. Warner, Eds., *Instruments of Science: An Historical Encyclopedia*, Garland: New York, NY, 1998, pp. 311-313.

17. W. B. Jensen, "The Origins of Alcohol 'Proof'," *J. Chem. Educ.*, **2004**, *81*, 1258.

18. *The Report of the General Committee of the Cincinnati Industrial Exposition Held in Cincinnati Under the Auspices of the Ohio Mechanics Institute, Board of Trade, and Chamber of Commerce from September 21st to October 22nd, 1870*, Cincinnati, OH, 1870, p. 286.

19. A modern chronograph is basically a highly sophisticated stopwatch.

VII

Did the Mound Builders Have A Written Language? or the Case of the Dubious Stones

Among the Cincinnati curios on the shelves of my personal library is a volume bound in blue cloth and published by the Cincinnati firm of Robert Clarke in 1894 under the title of *Miscellaneous Papers by Andrew Jackson Howe, M.D.* (1). Howe (figure 1) was born in Paxton, Massachusetts, in 1825 and, after graduation from Harvard, studied medicine at the Jefferson Medical College of Philadelphia and at several medical schools in New York City before receiving his medical degree from the Worcester Eclectic Medical Institute in 1855.



Figure 1. Dr. Andrew Jackson Howe
(1825-1892).

The fall following graduation, Howe was invited to lecture for a season at the Cincinnati College of Eclectic Medicine and Surgery. The next year he moved to Cincinnati permanently, where he first served as Professor of Anatomy at the Medical College and, after its merger with the Eclectic Medical Institute, as Professor of Anatomy and Surgery. Here he remained

until his death in 1892 at age 67, eventually serving as editor of the *Eclectic Medical Journal*. He apparently attained sufficient prominence in the medical profession that several biographical accounts of his life are currently available on the internet (2).

The book in question, which was published posthumously and edited by his widow, Georgina Lakin Howe, contains 25 essays by Howe on a wide variety of subjects, and is largely based on papers which he read to the Cincinnati Natural History Society and subsequently published in the *Eclectic Medical Journal*. Among these is an essay entitled “American Archeology,” first read to the Natural History Society in November of 1877, and which serves as the inspiration for this chapter of “Cincinnati Eccentrics, Cranks and Curios.”

Mysteries of the Mound Builders

By “American” archeology, Howe meant archeology related to the study of North American Indians and especially that based on the excavation of the hundreds of “Indian Mounds” found throughout Ohio and the adjoining states. In the early 19th century the vast majority of these so-called excavations were conducted by amateurs, often intent on finding buried treasure, and in this manner many of these mounds were destroyed before they could be studied scientifically. Though no treasure was ever found, many of the other artifacts that were unearthed found their way into the hands of private collectors rather than museums, thus further hampering a proper understanding of the ancient Indian cultures responsible for these structures. Indeed, since the first settlers in Ohio soon discovered that the Indians living there had no knowledge of who had constructed these mounds or why, they assumed that they had been built instead by nonIndians, leading to a voluminous speculative literature attri-

buting them to now extinct ancient Welsh, Irish, Roman, Phoenician, and Hebrew colonists, to name but a few.

By the time Howe wrote his account, private collections of Indian relics had become so common that he could name several well-known collectors from Cincinnati alone (1):

In Cincinnati, which is a somewhat noted place for large collections of "Indian Relics" in individual hands, can be found cabinets embracing thousands of specimens, and nearly all were obtained in Ohio and Kentucky. Mr. Thomas Cleaney has paid thousands of dollars for his exceedingly rich and rare collection, Dr. H. H. Hill has made exchanges with European collections, so that his cabinet is quite interesting by the intermixture of foreign patterns.

These private collectors had, in turn, created a market for Indian relics that was now being served by a new class of professional dealers specializing in Indian antiquities (1):

The country is thronged with relic hunters, and some of them cannot be trusted to make honest reports of "finds."... In all large cities there are parties who get a good living by trafficking in archeological goods. The dealers buy, sell, and exchange, and become experts in the purchasable worth of relics.

As suggested in this quote, this expanding demand for Indian relics had also created a potential market for fake artifacts (1):

The best preserved hollow utensils, as vases, water jugs, pans, and plates, are now brought from Missouri. Some specimens are so fresh and perfect that suspicion has arisen that a modern manufacture may have been started in that region. At McCutchinville, in Northern Ohio,

a man has a large stock of "archeological" goods which he has made with his own hands, He has agents out to supply those persons who have a desire to possess a rare collection of "relics."

One area in which the issue of archeological fraud was particularly prevalent centered around the question of whether the Mound Builders had developed a written language of some sort (1):

There has been such a desire to discover alphabetical signs or characters which should indicate the origins of the mound building race that the inducement to acquire fame by unearthing a pictured or inscribed stone, or one bearing inscribed characters that might be interpreted, has actually led to the execution of a few gross deceptions.

To illustrate his point, Howe then presented three examples of such fraud, each of which is characterized by virtually the same four-stage scenario:

1. Their initial discovery, accidentally or otherwise, by amateurs leads to conflicting accounts of when, where and who first found the stones.
2. Eventually there appear claims that the stones are frauds.
3. Counterclaims are made that the finders of the stones were too uneducated to have committed such a fraud.
4. Wild and improbable speculations are proposed concerning the nature and meaning of the inscriptions.

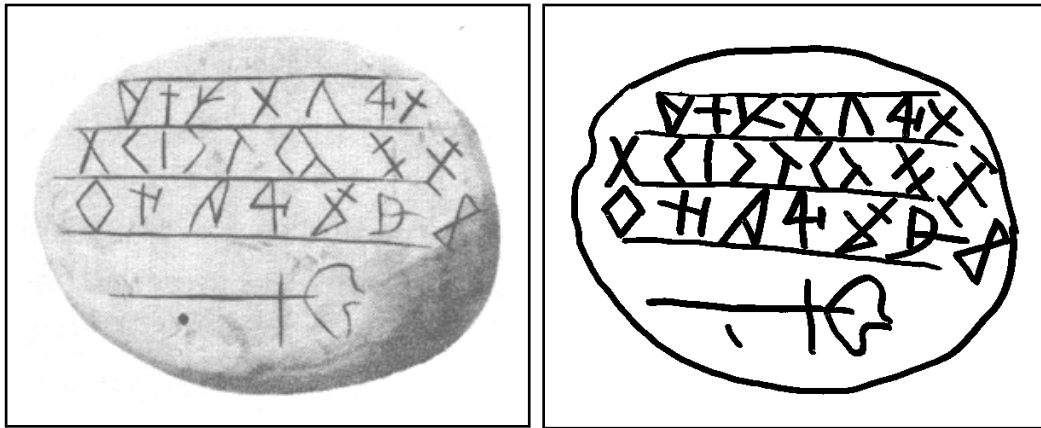


Figure 2. (Left): The earliest reliable etching of the Grave Creek Stone from H. R. Schoolcraft, *Indian Tribes of the United States*, 6 Vols., Lippincott & Gambo: Philadelphia, PA, 1851-1857. (Right): A transcription of the symbols on the Grave Creek Stone (3).

The Grave Creek Stone

Of the three examples cited by Howe, the earliest in point of time is the so-called “Grave Creek Stone” (1):

... which has several characters or letters engraved upon it, [and] is alleged to have been taken from the bottom of a mound seventy-five feet high, which is located on Grave Creek near the Ohio River, twelve miles below Wheeling in West Virginia. The mound was opened in 1838 by sinking a shaft from its apex to the level of the ground on which the earthwork was raised, and a horizontal canal or “drift” which should meet the vertical well at the center of the base of the tumulus. Just as the central point was reached the perpendicular earth fell into the horizontal shaft or drift. The loosened earth was carried out in wheelbarrows and, while it was being dumped, a stone as big as a Mexican dollar, and about twice as thick, was discovered.

The artifact in question (figure 2), which was composed of lime-

stone, was roughly 17/8" x 11/2" in size and had 23 symbols arranged in three lines engraved on its upper surface, the reverse side being empty. The mound in which it was found still exists and is now the centerpiece of Grave Creek Mound State Park, located in Moundsville, WV, where it has been designated as a National Historic Landmark. The mound is thought to date from 250-150 BC.

In keeping with stage one of our four-step scenario, there was initially confusion over where the stone was found and by whom. The first published account of the stone appeared on the front page of the 02 February 1839 issue of the *Cincinnati Chronicle* but apparently did not give the details of its discovery. However, in 1843 Abelard Tomlinson, one of the two brothers who led the excavation and who owned the property on which the mound was then located, claimed that the mound contained two large vaults, one situated above the other, and that they contained two skeletons, as well as a considerable amount of jewelry and other artifacts. He further claimed that he had found the stone about two feet from the skeleton in the upper vault. This story was largely accepted by Schoolcraft in an account published in 1845. In direct contradiction, a worker on the site by the name of Peter Catlett claimed that he was the person who found the stone near the inside of a stone arch, whereas one Colonel Wharton later claimed he was the first to spot the stone in the loose dirt and debris being dumped from the wheelbarrow, as in Howe's account.

In keeping with stage two, claims that the stone was a fraud also eventually appeared (1):

At the time the stone was found, and for a number of years afterwards, no one questioned its genuine character, but at length Mr. Squire, an eminent archeologist, suggested that the whole thing might be a fraud, although the "find" was made before many impositions of the kind were practiced. Prof. Charles Whittlesey, of Cleveland, a man well versed

in archeological science, in his pamphlet No. 33, denounces the Grave Creek Stone as an imposition.

More recently McColloch has updated the debates concerning the stone's authenticity (3), citing another three authors who claim that the stone is a fake. Yet a fourth critic appeared in 2008 in the person of an anthropologist named David Oestreicher who claimed that the stone was created by a local doctor named James Clemens, who had financed the excavations through loans to the Tomlinson brothers, by copying the symbols from a 1752 book on the marks found on old Spanish coins and monuments. Unhappily the brief newspaper accounts of these claims failed to give the name of the book in question.

In keeping with stage three, defenders of the stone's authenticity soon followed (1):

Mr. J. E. Wharton, of Portsmouth, Ohio, claims to be the only person now living who saw the stone taken from the earth when dumped from the wheelbarrow. He says that the loam adhering to its lettered surface bore evidence of having been there for centuries, and there was no opportunity for fraud in the case, nor inducement, inasmuch as the relic was never offered for sale by its owners.

To which arguments McColloch has added accounts of at least three more defenders (3).

In keeping with stage four, speculations over the nature and meaning of the symbols began to appear soon after the stone's discovery (1):

Some of the characters were thought to be Runic or Phoenician, therefore the stone was sent to Europe for an interpretation by scholars and pundits of the "universities." Casts were taken of it in

plaster and wax, and the genuine stone and its copies received extended attention. Our government had a drawing made of the famous stone, the work being done to illustrate "Schoolcraft's Indian Tribes"... It is now in the Smithsonian Institution at Washington.

In 1975 Barry Fell, who was a Professor of Zoology at Harvard, but who, in his later years, claimed to have found and translated numerous North American inscriptions proving European contacts with America previous to the birth of Christ, professed to have discovered that the letters on the Grave Creek Stone were Iberian and the language Punic (4). His published translation, like most of his other claims, are not accepted by mainstream archeologists. The possible relevance of the Braxton Creek or Wilson Stone, which contains symbols similar to the Grave Creek Stone and was discovered in 1931 in Braxton County, Ohio, could not be evaluated as I could not locate any details on its inscription nor evaluations of its supposed authenticity.

Finally, it should be noted that, contrary to Howe's concluding statement, the original Grave Creek Stone is not in the Smithsonian and its present location is unknown (3). For much of the 19th century it was part of the E. H. Davis Collection before this was sold in 1864 to what would later become the Blackmore Museum in Salisbury, England, though it was apparently not included among the sale items because Davis considered it to be a fake. However, between them, the Smithsonian and the National Anthropological Association own five plaster and/or wax copies of the stone made from the original when it was owned by Davis.

The Cincinnati Tablet

The second stone in point of time discussed by Howe is the so-called



Figure 2. (Left): An etching of the Cincinnati Tablet dating from 1876 (5). (Right): The Cincinnati Tablet as it looks today.

“Cincinnati Tablet,” that was (1):

... taken from a mound in this city [i.e., Cincinnati]. The tumulus was at the intersection of Mound and Longworth Streets and was razed to grade the ground for street purposes. While the loam was being carted away a stone five inches long and three inches broad, and a half an inch thick was found, and upon cleaning its surface a fine display of ornamental flutings was discovered.

As with the State of Ohio as a whole, the plateau on which the early city of Cincinnati was situated was originally studded with Indian Mounds of various sizes, all of which were eventually leveled as the city expanded. The “Cincinnati Tablet” (figure 2), which is made of light-brown, fine-grained sandstone, was uncovered in the fall of 1841 near the center of an Indian Mound located where the

alley between Fifth and Longworth Streets intersected the west side of Mound Street. As indicated by Howe, it was discovered in the course of leveling this 25ft-high mound in order to grade Mound Street and the adjoining alley, and its discovery was first announced to the public in the 12 December 1842 issue of the *Cincinnati Gazette*.

In contradiction to Howe's account, it wasn't found in the tailings, but rather by a boy by the name of J. L. Wayne, who was pestering the workmen as they peeled away the mound (5). Wayne found it beneath a human skull the workers had uncovered, but it was immediately taken from him and handed to Erasmus Gest, who owned some of the property on which the mound was located and who was the son of the City Engineer in charge of the removal. He later loaned it to the Western Academy of Natural Sciences, after which, by an unknown route, it eventually ended up in the Cincinnati Natural History Museum, where it is currently on display.

Claims that the tablet was a fake were less extensive than those surrounding the Grave Creek Stone (1):

... [it] is here believed to be a genuine find, though Mr. Whittlesey, before quoted, pronounces it a fraud. The genuineness of the stone has this in its favor, that it was picked up by those whose word has never been questioned. The history of the finding of the Tablet, together with an able description of the ancient earthworks that once existed on the plateau where Cincinnati now stands, was prepared and published by Robert Clarke in a pamphlet whose title page bears the following words: "The Pre-historic Remains which were Found on the Site of the City of Cincinnati, Ohio, with a Vindication of the 'Cincinnati Tablet,' 1876."

Whittlesey's charge that the stone was a fake was almost exclusively based on the claims of one Jared P. Kirtland of Cleveland,

who testified in 1871 that he was in Cincinnati visiting the chemical laboratory of the noted Cincinnati scientist and educator, John Locke, on the day the stone was found, when (5):

... an artful and sinister looking man rushed in the room, and assuming a high degree of excitement, stated that while excavating the center of the mound, he had dug out a curiously engraved stone, which he could sell us for \$40 or \$50 ...

Dr. Locke then carefully examined the stone with a magnifying glass and declared it to be a fraud, to which conclusion Kirtland further added (5):

I afterward learned that this stone was cut and engraved in a marble shop in that city, and was carefully buried the night previous in the mound, where it would be reached by the excavators.

Robert Clarke – the same Robert Clarke who would later publish Howe’s miscellaneous papers – in the pamphlet cited by Howe in the earlier quote (5), was able to conclusively discredit Kirtland’s testimony, though he suggested no motivation for Kirtland’s apparent fabrications. In any case, the tablet is now considered genuine by the majority of modern archeologists, in part because more than 15 additional examples of such tablets have since been recovered from Indian Mounds throughout Ohio and Kentucky, including the Bainbridge Tablet, the McKensie Tablet, the Meigs County Tablet, and the Wilmington Tablet (6, 7), though none of these exhibit either the design symmetry of the Cincinnati Tablet or the detail of its execution.

Though speculation persists as to whether the flutings on these tablets are some kind of written language or, at best, correspond to highly distorted images of various animals (6, 7), Howe, himself,

remained skeptical (1):

While I have no reason to question the genuine character of the Cincinnati Tablet, I do not see as much in its engraved flutings to convince me that a written or pictorial language existed among the Mound Builders, as I find in other sources

The three currently most popular speculations as to the tablet's meaning were in fact stated as early as 1848 by the American ethnologist, Ephraim G. Squire, when he suggested that the tablet might either be astronomical in nature or was a template for a tattoo or a stamp to decorate cloth and animal skins (5). The astronomical hypothesis remains highly controversial (8, 9). In favor of the block printing hypothesis is the fact that traces of red ochre have been found on the surface and grooves of some of the more recently recovered tablets. In favor of the tattoo hypothesis is the fact that the Cincinnati Tablet was found with two short, seven-inch, pieces of bone that were sharpened at one end and with a quantity of charcoal, both items being used by later Indians for purposes of tattooing. Likewise, three long grooves are present on the reverse side of the tablet that may have been used to sharpen the bones, as well as several small cavities that might of held the charcoal and other pigments for insertion into the resulting puncture wounds.

Unhappily the Adena culture (one of several subsumed under the rubric of Mound Builders) responsible for the Cincinnati and related tablets, ceased to exist hundreds of years before the advent of Europeans in the Ohio valley and the tattoo designs used by the Indians they found there do not resemble the designs on the tablets. Obviously, any perishable items, such as cloth or animal skins, that might have employed such designs, have also long since vanished.

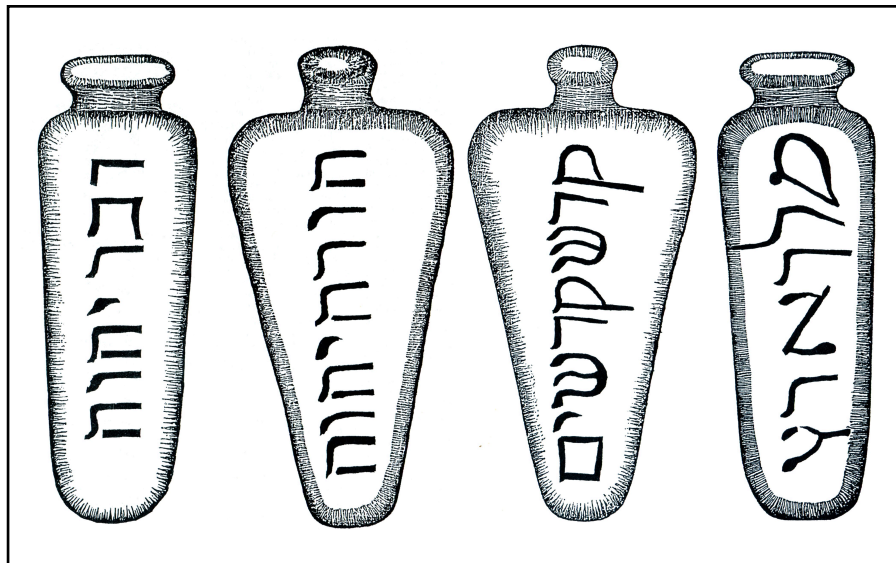


Figure 3. The Newark “Keystone” as depicted in a period pamphlet (10) and on the front page of the 01 September 1860 issue of *Harper’s Weekly*.

The Newark Holy Stones

The third, and most recent, case of apparent fraud discussed by Howe was that of the so-called “Newark Holy Stones” (1):

In 1860 an engraved stone was put on exhibition in Cincinnati. The specimen was called the “Holy Stone” by its alleged finder, possessor, and exhibitor. It was claimed to have been exhumed from a mound opened near Newark, Licking County, Ohio.

The town of Newark is located roughly 33 miles east of Columbus and is home to the largest Indian earthwork complex in the state of Ohio. Thought to have been constructed by the Hopewell culture (yet another culture subsumed under the rubric of the Mound Builders), which thrived between 100 BC and 500 AD, the Newark Earthworks have since been designated as a National Historic Landmark.

A local Newark resident named David Wyrick first found the stone described by Howe in June of 1860 (11). Made of polished yellowish-brown sandstone, this 6" x 1 5/8" artifact is now commonly known as the "Keystone" because of its unusual shape. It contains Hebrew inscriptions on all four sides that have been translated to read (from left to right in figure 3) "The Word of the Lord," "The Laws of Jehovah," "The Holy of Holies," and "King of the Earth." – this translation being made soon after the stone's discovery by a Newark minister by the name of John McCarty and published in an issue of the *Cincinnati Commercial*.

The "Keystone" was almost immediately declared a fraud (1):

Everybody supposed the stone was genuine until some Hebrew scholars examined the characters plainly chiseled on the face of the "dornick." These Hebrew critics discovered that the consonants were attended by vowel marks that had been introduced in the twelfth century, consequently the engraving was comparatively recent, and, of course, a barefaced deception.

However, this exposé did not prevent Wyrick from uncovering yet a second, even more remarkable, stone that November (1):

Although the exhibitor was denounced as an impostor, he unearthed a stone from another mound which bore an epitome of the Ten Commandments in the same modern Hebrew characters.

This second find (figure 4), made of black sandstone, is now known as the "Decalogue Stone," and was found enclosed in a 8" x 4" x 3 1/2" close-fitting brown sandstone box. It was engraved on both the front and back with the ten commandments using – in contradiction to Howe's statement – a Hebrew script that had been altered so as to



Figure 4. The Newark “Decalogue Stone” as depicted in a period pamphlet (10)

look archaic and with the image of a figure that was labelled as “Moses.”

Howe also recounted an apparent solution as to how Wyrick had managed to fabricate these stones (1):

The neighbors of the finder of these astonishing relics declared that he was as ignorant of Hebrew as he was of the tattoo marks on the Fiji Islanders, therefore the inscriptions must be out of his power to design. After the death of the finder, a Hebrew Bible was found in his house, and from that he had patiently copied the letters.

As for Wyrick’s motives, it has been pointed out by several historians that he was an ardent advocate of the theory that the Indian

mounds were actually the work of the Lost Tribes of Israel, and some are of the opinion that Wyrick, despite the tale recounted by Howe, may not have been the author of the stones himself but rather the butt of an elaborate hoax on the part of some of his neighbors intent on mocking his obsession with the Lost Tribes hypothesis (11). On the other hand, another Newark resident by the name of William Cunningham insisted that the first stone was actually a Masonic Keystone and provided proof that the Indian Earthworks had been built by the ancient Masons rather than by the Lost Tribes of Israel.

The Newark stones are currently on display at the Johnson-Humrickhouse Museum in Roscoe Village, Coshochon, OH.

References and Notes

1. A. J. Howe, "American Archeology," in G. L. Howe, Ed., *Miscellaneous Papers by Andrew Jackson Howe, M.D.*, Clarke: Cincinnati, OH, 1894, pp. 105-119.
2. See also O. Juettner, *Daniel Drake and his Followers: Historical and Biographical Sketches*, Harvey: Cincinnati, 1909, pp. 377-379.
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4. B. Fell, *America BC*, New York Times Books: New York, NY, 1975 and B. Fell, "The Etymology of Some Ancient American Inscriptions," *Epigraph. Soc. Occas. Publ.*, **1976**, 3, No. 76.
5. R. Clarke, *The Pre-historic Remains that were Found on the Site of the City of Cincinnati, OH, with a Vindication of the "Cincinnati Tablet,"* Clarke: Cincinnati, OH, 1876. Available on line.
6. D. W. Penney, "The Adena Engraved Tablets: A Study of Art Prehistory," *Contin. J. Arch.*, **1980**, 5(1), 3-18.
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8. W. F. Romain, "Evidence for a Basic Hopewell Unit of Measure," *Ohio*

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11. B. T. Lepper, J. Gill, "The Newark Holy Stones," *Timeline*, **2000**, 17(3), 16-25. This is a beautifully illustrated article. Unfortunately its authors become sidetracked with the highly improbable thesis that the stones were fabricated in order to influence pre-Civil War debates over the creation of the African race and their consequences for the theological justification of slavery.

VIII

Mr. Skinner and the Great Pyramid or the Case of the Mystical Lawyer

James Ralston Skinner was born in 1830 in Lockport, New York, one of four children of Dr. Josiah Skinner and Janette Logan Chase (1). As a teenager he was sent to Cincinnati to live with and study under his maternal uncle, Solmon P. Chase (figure 1), who had been practicing law there since 1830. As early as 1851 he is listed, at age 21, in the Cincinnati City Directory under his preferred moniker of Ralston Skinner, as an independent attorney with offices on the northwest corner of Sycamore and 3rd Streets (figure 2).

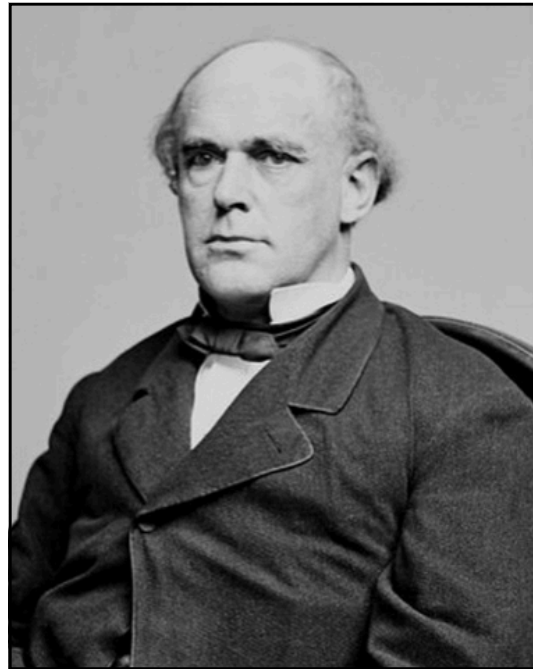


Figure 1. Salmon P. Chase (1808-1873).

By this time his uncle had largely abandoned the practice of law for politics. In 1849 Chase was elected to Congress, and in 1855 he became Governor of Ohio, followed in 1861 by his appointment as

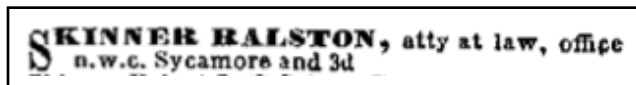


Figure 2. Skinner's entry in the Cincinnati City Directory for 1850-1851 (2).

Secretary of the Treasury under Lincoln, and in 1864 by his appointment to the Supreme Court, where he remained until

his death in 1873. As for Ralston, he seems to have stuck to his law practice, though by 1861 he was listed in the City Directory as an attorney in the employ of the law firm of Pullan, Hutfield and Brown on West 4th Street. In November of the following year, he enlisted in the Union Army, where he served with the rank of major as Judge-Advocate-General for General William Rosecrans. However, he suffered a mental breakdown after witnessing the decapitation of a fellow soldier by a cannon ball and resigned his commission in March of 1865.

After the war, he seems to have retired, at age 35, from the practice of law since, from this point on, he is no longer listed in the City Directory as an attorney and only his home address at 110-112 Broadway is given. This was possible because he was, by this time, financially well off – at least if we are to believe the 1880 census, which indicated that his household employed five servants. This newly acquired wealth probably had less to do with the success of his short-lived law practice than with the fact that he had married a Cincinnati girl named Emma Louise Wiggins in 1857, who was the daughter of one Samuel Wiggins. Samuel had first made his fortune operating a fleet of ferry boats between the Illinois side and St. Louis side of the Mississippi River, and had gone on to become a wealthy banker and realtor in Cincinnati.

In any case, starting in the late 1860s, Ralston would devote the rest of his life to activities unrelated to the practice of law. Thus, in 1869 he published a small essay on the physics of force and matter (3), and in 1870 he became one of the founding members of the Cincinnati Natural History Society. But, alas, these promising beginnings were soon diverted into less wholesome channels as he began a preoccupation with pseudoscience and the occult that would last until his death on 02 September 1893, at age 63, and would eventually result in the publication of at least 19 more pamphlets and full-scale



Figure 3. The Great Pyramid of Giza as it appears today.

books dealing, either directly or indirectly, as we will see below, with the significance and symbolism of the Great Pyramid of Giza. Though many of these were published by the Cincinnati firm of Robert Clarke and Company, there is no doubt that they were paid for by Skinner himself, or rather by his wife's inherited fortune. Whether his war trauma also played a role in all of this, is unknown.

The Cult of the Great Pyramid

The Great Pyramid of Giza, also known as the Pyramid of Khufu or the Pyramid of Cheops (figure 3), is the largest of the three pyramids located on the Giza plateau on the outskirts of the modern city of Cairo. Though it has played a role in European mysticism since the Middle Ages, the modern cult of “pyramidology” (4), as it is now called, can be traced to an 1859 book by the English author, John Taylor, entitled *The Great Pyramid: Why Was It Built? And Who Built It?* (5). This was followed by three books by Charles Piazzi Smyth, the Astronomer-Royal of Scotland, that appeared in 1864, 1867, and

1868, respectively: *Our Inheritance in the Great Pyramid* (6), *Life and Work at the Great Pyramid* (7), and *On the Antiquity of Intellectual Man* (8).

The basic premise of the Great Pyramid cult is that the ancients knew far more than modern science and that they encoded this knowledge in the physical dimensions of the great pyramid and other select ancient monuments. The cult basically divides into two separate extremes. The first of these believes that these measurements reveal the true value of the Biblical cubit, which is the God-given natural unit of measurement (in contrast to the atheistic metric system) and is also the proper unit for describing the physical structure of the universe; whereas the second also believes that these measurements encode the dates of both past and future historical events of Biblical significance, including the eventual end of the world.

This second extreme would eventually give birth to several religious cults, such as the Jehovah Witnesses, whose founder, Charles Taze Russell, based many of his failed predictions of the second coming of Christ on pyramidology. The problem with the many books devoted to this interpretation, as sarcastically pointed out many years ago by Bertrand Russell (no relation to Charles), is that (4):

... the Great Pyramid always predicts the history of the world accurately up to the date of publication of the book in question, but after that date it becomes less reliable ... [and] the reader is reluctantly driven to skepticism.

Far more critical, however, is the fact that measurements of the pyramid – as might be expected for such a time-worn monument – are often only approximate, if not arbitrary, and are often mathematically manipulated in equally arbitrary fashions by pyramid enthusiasts, either by multiplying them by arbitrary numerical factors or by raising

them to arbitrary powers in order to force agreement with various astronomical measurements and/or selected historical dates. As Martin Gardner has observed (4):

If you set about measuring a complicated structure like the Pyramid, you will quickly have on hand a great abundance of lengths to play with. If you have sufficient patience to juggle them about in various ways, you are certain to come out with many figures which coincide with important historical dates or figures in science. Since you are bound by no rules, it would be odd indeed if this search for Pyramid "truths" failed to meet with considerable success.

To further underscore his point, Gardner then shows how to deduce numerous mathematical, mystical, physical and historical truths from the published measurements of the Washington Monument.

Skinner Adds His Two Cents

With the publication of the last of Smyth's three books in 1868 we come to the point when Skinner first entered the field with his publication in 1871 of a 17-page pamphlet entitled *The Great Pyramid of Jizeh: The Plan and Object of Its Construction*. This fully acknowledges the earlier work of both Taylor and Smyth (9). Of the two extremes mentioned, Skinner appears to have largely fallen into the cubit category as revealed by such later publications as *The Ancient Days. The Measure of the Heavens and the Earth by Means of the Only Unit of Measure: The British Inch* (1873, 46 pp); *Key to the Hebrew-Egyptian Mystery in the Source of Measures Originating in the British Inch and the Ancient Cubit* (1876, 63 pp); *The Crown Jewels of the Nations are their Measures* (1877, 90 pp); *Actual Measures of the Great Pyramid of Egypt in Terms of the British Inch:*

Disclosing by Its Means the Architectural System Employed in Its Construction (1888); etc. (10).

How, the careful reader may ask, did the Biblical cubit and the British inch get entangled with an Egyptian monument? This leads to yet further dubious paths of self-delusion pioneered by pyramid enthusiasts. If one assumes that the pyramids were actually built by Hebrew slaves and architects, the appearance of the cubit is easily explained. If the length of the cubit, assumed to be equal to that of one of the Great Pyramid's outer casing stones, is divided by 25, one obtains a unit that Symth called the "pyramid inch," which is only slightly larger than the British inch. Explaining this slight difference as a natural consequence of the passage of time – this connection obviously proves, at least to true believers, that the British have descended from one of the lost tribes of Israel. Indeed, this latter conclusion would form the basis of a 20th-century cult known as the "Anglo-Israel Movement" (4).

As for Skinner, he seems to have focused on the Hebrew-Egyptian connection, as revealed in the titles of yet other pamphlets, such as the *Cabbalah* (1885), *Hebrew Metrology* (1885), *Kabala, the Zodiac, and the Pyramid of Gheza* (10), and his 1875 opus magnum, *Key to the Hebrew-Egyptian Mystery in the Source of Measures Originating in the British Inch and Ancient Cubit by which was Built the Great Pyramid of Egypt and the Temple of Solomon and Through the Possession and Use of Which, Man, Assuming to Realize the Creative Law of the Deity, Set It Forth a Mystery, Among the Hebrews Called the Kabbala* (11). One would have thought that Skinner had said all he had to say within the limits of his ponderous title but, alas, he required another 324 pages to further elaborate.

Nor did this end the matter. He also became embroiled in that classic of pseudoscience – the squaring or quadrature of the circle (figure 4) – and in debates over the units and proportions used in

Greek architecture (10).

Responses to Skinner

Some of Skinner's writings did come to the attention of Madame Blavatsky (figure 5), the founder of the occult movement known as theosophy, and six letters she wrote to him are on file at Harvard (12). However, there is no evidence that Skinner ever reciprocated her interest and he is not listed among the members of the 19th-century Cincinnati chapter of the theosophy society, though he did become a member of the McMillan Lodge No. 141 of the Free Masons on 08 May of 1885 and contributed several articles to their journal.



Figure 5. Madame Blavatsky (1831-1891)

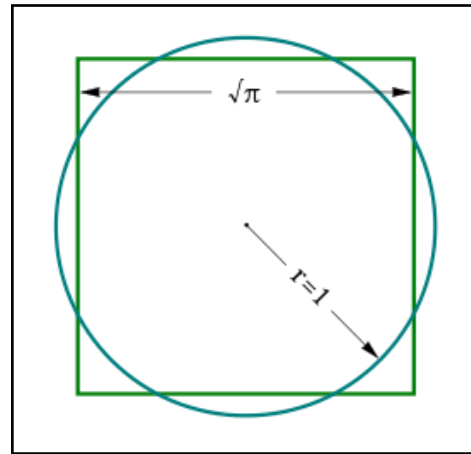


Figure 4. The ancient problem of squaring the circle: Can one construct, using only a compass and straight edge, a circle and square of identical areas?

As for the skeptical literature, his writings on the squaring of the circle came too late for comment in De Morgan's classic book, *A Budget of Paradoxes*, which was first published in 1872 and focused on the debunking of mathematical cranks (13). However, Skinner's 1875 epic did come to the attention of John Fiske, who described it in his delightful 1898 essay "Some Cranks and their Crotches" as "bristling with diagrams and decimals, Hebrew words and logarithms" (14).

Fiske's essay was prompted by his past experiences working in Harvard's library, where he was assigned the task of dealing with the countless free pamphlets and books on pseudoscience and other assorted nonsense so generously donated by their authors. He quickly learned how to appraise these gifts by looking for some of the – as he put it – tell-tale “stigmata or witch marks of crankery,” among which was one that fit Skinner's case perfectly (13):

A favorite occupation of cranks is the discovery of hidden meanings in things. Whether we are to say that the passionate quest of the occult has been prolific in mental disturbances, or whether we had better say that persons with ill-balanced minds take especial delight in the search for the occult, the practical result is about the same. The impelling motive is not very different from that of the circle squarers – it is pleasing to one's self-love to feel that one discerns things to which all other people are blind. Hence the number of mare's nests that have been complacently stared into by learned donkeys is legion.

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1. I have been unable to locate a photo of Skinner.
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3. J. R. Skinner, *Force and Its Effects Upon Matter*, Clarke: Cincinnati, OH, 1869.
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8. C. P. Smyth, *On the Antiquity of Intellectual Man: From a Practical and Astronomical Point of View*, Edmonston & Douglas: Edinburgh, 1868.

9. J. R. Skinner, *The Great Pyramid of Jizeh: The Plan and Object of Its Construction*, Clarke: Cincinnati, OH, 1871.

10. For a bibliography of Skinner's publications, see http://theosophy.wiki/w-en/index.php?title=James_Ralston_Skinner. Many of those listed seem to be repetitions and/or off prints of previous writings and many can be found posted on the internet.

11. J. R. Skinner. *Key to the Hebrew-Egyptian Mystery in the Source of Measures Originating in the British Inch and the Ancient Cubit by which was Built the Great Pyramid of Egypt and the Temple of Solomon and Through the Possession and Use of Which, Man, Assuming to Realize the Creative Law of the Deity, Set It Forth a Mystery, Among the Hebrews Called the Kabbala*, Clarke: Cincinnati, 1875. A second edition was printed posthumously in 1894 with additional appendices based on his later pamphlets.

12. See the link <http://oasis.lib.harvard.edu/oasis/deliver/deepLink?collection=oasis&uniqueId=div00516>.

13. A. De Morgan, *A Budget of Paradoxes*, Longmans, Green & Co: London, 1872.

14. J. Fiske, *A Century of Science and Other Essays*, Houghton, Mifflin & Co: Boston, MA, 1899, pp. 336-442; see especially pp. 413-414.

IX

Frankenstein on the Ohio

or the Curious Case of the Lloyd's Artificial Man

The present generation hardly remembers the central role played by the American pharmacist, John Uri Lloyd (figure 1), in the scientific and cultural life of late 19th- and early 20th-century Cincinnati (1). Though he has been the subject of two book-length biographies (2, 3) and physical reminders of his legacy may still be seen in Cincinnati in the form of both the Lloyd Library on Plum Street (figure 2) and the Lloyd mansion in Clifton (figure 3), few today can tell you who Lloyd was and why he was so influential in his day.

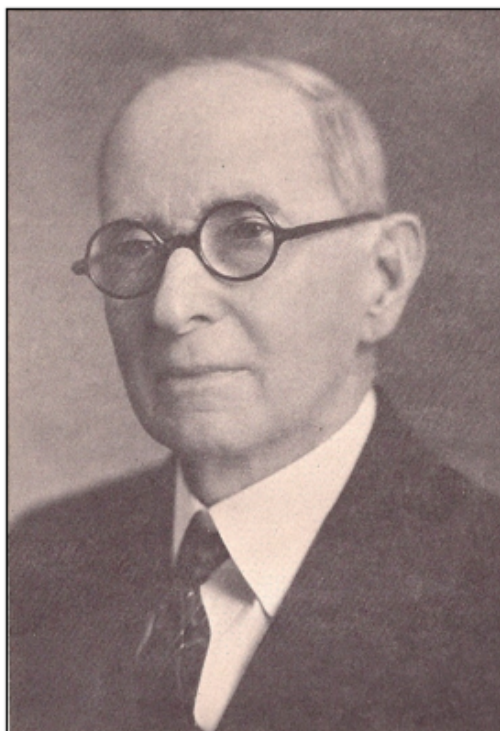


Figure 1. John Uri Lloyd
(1849-1936).

An Overview of Lloyd's Life and Career

Born in New York State in 1849, but raised in rural Kentucky, Lloyd first came to Cincinnati in 1863 at age 14 to work as an apprentice for several manufacturing pharmacists. By 1886 he and his brothers, Nelson Ashley Lloyd and Curtis Gates Lloyd, were able to buy out



Figure 2. The Lloyd Library at 917 Plum Street.

the drug firm of Merrell and Thorp, which they renamed as Lloyd Brothers, Pharmacists, Inc. As Merrell had before him, Lloyd specialized in the manufacture of the plant extracts and tinctures favored by the Eclectic medical movement, which operated an alternative medical school in downtown Cincinnati, where Lloyd also served as Professor of Chemistry (4).

Visibly active in the American Pharmaceutical Association and in various local scientific organizations, Lloyd became involved early in his career in an attempt on the part of the Eclectic movement to standardize its largely botanical pharmacopeia. His innovations in the preparation and standardization of plant extracts, such as his so-called “cold still” extraction process and his introduction of buffered alkaloids (Lloyd’s reagent), soon established him as an expert in phyto-pharmacy – a reputation that was further reinforced by his founding of a major research library devoted to botanical and

the drug firm of Merrell and Thorp, which they renamed as Lloyd Brothers, Pharmacists, Inc. As Merrell had before him, Lloyd specialized in the manufacture of the plant extracts and tinctures favored by the Eclectic medical movement, which operated an alternative medical school in downtown Cincinnati, where Lloyd also served as Professor of Chemistry (4).

Figure 3. The Lloyd mansion at 3901 Clifton Avenue, now listed on the National Register of Historic Homes.



phytochemistry, a great outpouring of self-published books and pamphlets – often stressing his own accomplishments – and his second career as a novelist. Though most of his novels, which were largely set in the rural Kentucky of his childhood, were only moderately successful, his 1895 “hollow-earth” fantasy – *Etidorhpa* – had some success, eventually passing through 18 editions and translation into seven languages.

To a modern-day chemist, the exact basis of Lloyd's scientific accomplishments remains something of a mystery. As recounted in Margaret Kreig's popular book, *Green Medicine*, the investigation and assessment of a traditional plant or herbal remedy by the modern pharmaceutical industry requires proper clinical studies to determine its efficacy, followed by the extraction, purification, chemical characterization, and the synthesis and/or chemical modification of its active ingredient (5). Most of this is missing from the work of Lloyd – in part, because he lacked the formal chemical training necessary for such work and, in part, because many of the necessary techniques were unavailable for much of his early career. These limitations were endemic to the Eclectic movement as a whole, which, by the time of Lloyd's death in 1936, had largely collapsed as an legitimate alternative to mainstream medicine and pharmacy and whose remnants are now largely confined to the shelves of your local health food store (4).

Even in cases where Lloyd made interesting discoveries or innovations, he often had to rely on the insights of others (for example Wolfgang Ostwald in the case of Lloyd's reagent) to provide the proper scientific rationale. And, of course, as a manufacturer of patent medicines, he also had to indulge in the usual advertising hype required to promote his products – a necessity often at odds with the exercise of proper scientific caution. The manner in which these limitations and conflicting demands could come into play is well

Figure 4. John Thomas Lloyd
(1884-1970).

illustrated by the curious case of Lloyd's so-called "Artificial Man" and its financial consequences for the head of the University of Cincinnati's Chemistry Department – Harry Shipley Fry.

The Search for the Ultimate Blood Tonic

According to his first biographer, Corinne Simons, Lloyd had long been interested in the subject of iron-based "blood tonics" supposedly designed to reinvigorate "tired" or iron-deficient blood (figure 5), as well as in the question of how sunshine might promote health and/or disease (2, 6). In 1919 Lloyd was joined in this quest by his son, John Thomas Lloyd (figure 4), who had been trained in limnology at Cornell University and who was teaching there when called home by his father to assist in the family business.

A more recent version of these blood tonics, which many readers may still remember, is the product known as *Geritol*, which gained national attention through its sponsorship of numerous television programs during the 1950s and 1960s, and notoriety when it was penalized with a \$812,000 fine by the Federal Trade Commission in 1973 for advertising claims amounting to "gross negligence and bordering on recklessness." Indeed, the present author can recall being repeatedly dosed as a child with similar iron/plant extract combin-

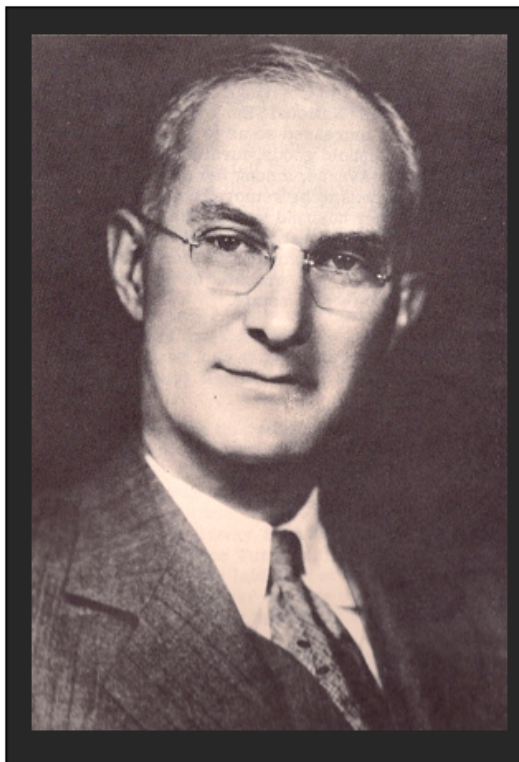




Figure 5. A vintage 19th-century ad for a “rejuvenating” blood tonic.

ations by his maternal grandmother – extracts which she routinely purchased from a mail order firm known as the Indiana Botanical Gardens.

Frankenstein in a Bottle

Around 1926 the younger Lloyd prepared a series of blood tonics containing what he described as a “dispersion of catalytic iron” and which he claimed were stable “in the presence of acids, alkalis and tannin.” Several corked bottles of this preparation were placed in the sunshine of a laboratory window for closer observation. After several hours the corks began to blow out of the bottles. Lloyd then prepared a second series of bottles, this time stoppered using a cork through which passed a short glass tube. Observation soon established that gas bubbles began to appear in these tubes about a half hour after the bottles were placed in the sunshine of the window,

and that no gas was produced at night.

The Lloyds quickly jumped to the conclusion that they had discovered a key as to how iron in the blood interacted with sunshine and a potential solution to the questions that had occupied the senior Lloyd for so many years. As later described by Simons (6):

Thus it was that Lloyd's "artificial man" came into being. The bottle was filled with a fluid that represented the chemical affiliations of blood. Several of the "artificial men" were exposed to the sunshine. But nothing happened. No gas – no "breathing." Into one was put catalytic iron, the newly found "blood iron." In thirty minutes, bubbles flowed. When night came, the bubbles ceased. With the morning sun, they resumed ... This was their joint experiment which enabled scientists to determine the actual effect of light upon the human blood, the system and constitution, and to establish if sunshine may be responsible for disease in some cases and radiant health in others. In brief it discussed what one's daily dose of sunshine should be.

So convinced were the Lloyds of the scientific significance of their discovery that the younger Lloyd made the mistake of issuing a popular summary of their results to the syndicated press, which, in turn, rather predictably transformed it into a grotesque distortion of the actual events (5):

Using a bottle that "lives" in sunshine and "dies" in shade, two scientists have culminated nearly fifty years of research with the discovery of a mysterious gas, which may be exuded by all human beings, and which reacts in weird fashion to light rays.



Figure 6. Harry Shipley Fry
(1878-1949).

Shocking Ignorance

Despite their initial enthusiasm and the resulting hype, the Lloyds soon had to admit that they both lacked the chemical expertise to properly unravel what was actually happening inside their so-called artificial man, finding instead that they had reached “the point where progress ceased and failure became static.” As had been the case in the past, Lloyd now turned

to others having more advanced chemical training, and offered Harry Shipley Fry (figure 6), Head of the University of Cincinnati Chemistry Department, a small research grant to study what was really going on in their iron tonics. Fry used the grant to support a masters candidate in chemistry by the name of Elmer Gerwe, who summarized his findings in a M.A. thesis presented to the faculty in June of 1927 and in a paper jointly published with Fry in the December 1928 issue of *Industrial and Engineering Chemistry* under the title of “Action of Ultra-Violet Light Upon Ferric Citrate Solutions” (7).

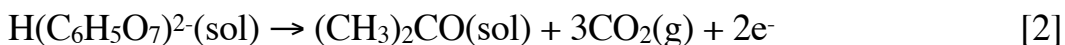
No references to artificial men, mysterious gases, or the effects of sunshine on human blood are to be found in the paper by Fry and Gerwe. Instead the issue is presented as a problem of dealing with the photochemical stability of pharmaceutical preparations containing both ferric compounds and citric acid – both of which were apparently components of Lloyd’s blood tonic. The authors were quick to point

out that the photochemical reduction of ferric or iron(III) salts to ferrous or iron(II) salts in the presence of carboxylic acids, such as oxalic, citric, tartaric and malic acid, had been known to photochemists since the 1870s.

In modern electronic terms, the Fe^{3+} ion and the citrate anion almost certainly form a complex of some sort in solution which is decomposed by the ultraviolet light in the sunshine, leading to reduction of Fe^{3+} to Fe^{2+} :



and the simultaneous oxidation of the hydrogen citrate ligand to acetone and carbon dioxide:



with the latter product accounting for the observed bubbles formed whenever the artificial man was exposed to sunlight (8). Since this mechanism – though already proposed in the literature for the oxidation of citrate – was still somewhat speculative, the bulk of the paper was concerned with experimentally establishing that the molar ratio of Fe^{3+} used to the moles of carbon dioxide formed was indeed 2:3 as predicted by the proposed net equation.

It is of interest to note that this same photochemical reaction forms the basis of the photographic process known as “cyanotyping” or “blueprinting.” First proposed by John Herschel in 1842, by 1915 the blueprint process was sufficiently widespread so as to be routinely described in high school chemistry textbooks and lab manuals (9).

Whatever his ultimate views concerning Lloyd’s competence as a chemist, Fry had long been sensitized to his value to the chemistry department as a potential source of financial support and had been



Figure 7. An autographed photo of Lloyd in his laboratory on the occasion of his 75th birthday that was presented to “the students and faculty of the University of Cincinnati.”

careful to cultivate Lloyd’s good graces. Thus in 1924 an autographed photo of Lloyd was requested to hang in the departmental conference room (figure 7) and he was also invited by Fry to serve as an honorary chairman for the 80th National Meeting of the American Chemical Society, which was held in Cincinnati in September of 1930 (10).

More serious, however, is the manner in which the incident of the artificial man revealed the rather naive folklore views held by Lloyd on such subjects as medicine, human physiology, and pharmacology – views that by the 1920s, at least, were woefully out of date. And it also calls to mind the fact that many years earlier Lloyd had used the vehicle of his novel *Etidorhpa* to express similar non-mainstream views on a variety of other scientific subjects, many of which could be uncharitably interpreted as bordering on pseudoscience (11).

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6. Reference 2, pp. 116-118. Regrettably Simons is often hopelessly vague in her descriptions and also fails to reference her sources, so some caution is necessary when citing her version of events. Unfortunately the present-day Lloyd library reports that it has no files or press clippings relating to the story of Lloyd's "artificial man."
7. H. S. Fry, E. C. Gerwe, "Action of Ultra-Violet Light upon Ferric Citrate Solutions," *Ind. Eng. Chem.*, **1928**, *20*, 1392-1394.
8. In the actual paper, Fry used traditional molecular equations rather than net ionic half-reactions. Hence the Fe^{3+} concentration was instead formalized in terms of the salt $\text{Fe}_2(\text{SO}_4)_3$ and the reaction stoichiometry in terms of a predicted 1:3 molar ratio of this salt to the moles of CO_2 formed.
9. See, for example, R. B. Brownlee, R. W. Fuller, W. J. Hancock, M. D. Sohon, J. E. Whitsit, *First Principles of Chemistry*, Allyn & Bacon: Boston, 1915, pp. 380-381.
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