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Chapter 8

The 'Trip to the Moon' and Other Early Spaceflight Simulation Shows, ca. 1901-1915: Part I*

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Several previous History of Astronautics Symposia papers have examined cultural as well as technical aspects of the history of astronautics. The author has recently discovered the "Trip to the Moon" (and Mars and Venus) entertainment shows which appeared ca. 1901-1915 in the United States and were the world's first large-scale simulated spaceflight rides for mass audiences. Since several million people attended these shows, the notion of the concept of spaceflight being only confined to or disseminated by books, articles, and some short films of the period, may thus be easily dispelled. This paper also examines precursors, dating back to the 18th century.

The "Trip to the Moon" shows presented here thus provide a clearer historical picture of the early history of the popular or mass culture side of the idea of spaceflight.

As with the emergence of other forms of mass culture at the turn of the century, these earliest combination electrical-mechanical "Trip to the Moon" simulation shows were products of rapid advancements in technology of the period. However, the means of propulsion and other facets of the space journeys themselves were fanciful, not scientific. This in itself offers another useful perspective in that it demonstrates that this period was clearly still in the "fantasy

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phase" of the history of spaceflight concepts. The public consciousness would have to await about two decades later for the widespread publicized appearances of the first scientific concepts of spaceflight by Robert H. Goddard, Hermann Oberth, and the other great early astronautical theorists before popular cultural manifestations of the spaceflight idea would enter a new and more mature phase. That phase of the history of the spaceflight idea in popular culture, particularly in spaceflight simulations, will be taken up later by the author. In the meantime, Part 2 of this paper, presented at the Thirtieth History Symposium of the International Academy of Astronautics, Beijing, China, 1996, to be published later, covers the carnival and later amusement park and exposition manifestations of the "Trip to the Moon" (and other planet) shows prior to World War I.

Precursors

The earliest simulations of spaceflight appear to be found in stage plays with space themes. Examples are: Mrs. Aphra Behn's "The Emperor of the Moon" (1687), an adaptation of John Wilkins' *A Discourse Concerning A New World and Another Planet*, published in 1638; a comic opera by Thomas d'Ufrey of 1706, based on Bishop Godwin's *Man in the Moone*, also published in 1638; Jean-François Cailua d'Estendoux's comic-tragic extravaganza "Le Cabriollet Volant" ("The Flying Chair") (1770) in which the hero, like Cyrano de Bergerac's literary hero in his *L'Histoire Comique des Etats et Empires de la Lune* (*Comic History of the States and Empires of the Moon*) (1649), was transported about on a carriage fitted with rockets; Josef Haydn's 3-act comic opera, "Il Mondo della Luna" ("The World of the Moon") (1777); Jacques Offenbach's "Voyage dans la Lune" ("Voyage to the Moon"), based on Jules Verne's classic spaceflight novels of 1865 and 1870 and which opened in Paris in 1875 with performances in London as well as other European capitals then presented in the U.S. in 1875 and 1877; and Edmund Rostand's "Cyrano de Bergerac" (1897) which also achieved international acclaim. None of these plays were of course scientific representations. With few exceptions, like d'Estendoux's production, the space simulations were limited to, or combinations of, painted backdrops, crude props, suggestive dialogue, and basic stage effects such as lighting. Moreover, the audiences were spectators rather than participants in the simulations. Consequently, the simulations were one-dimensional.[1]

Perhaps the earliest three-dimensional attempt at a space-ride which involved participation may have been in the form of a theatrical amusement, or amusement device. A most curious advertisement, appearing in the Irish journal *Country Gentleman* for 2 May 1726 is highly suggestive of this. The advertisement is worthwhile quoting at length:

> "The famous Planetary Caravan, being now entirely finish'd and render'd convenient for all such Persons, who have any Desire to visit the Moon, Venus, Mercury, or any other of the Planets, is remov'd from Mr. Deard's

Toy-Shop in Fleet-street, to Mr. Fawke's great Booth in the Tennis-Court near the Hay-market; where Passengers may be accommodated with every Thing proper for so long a Journey. This Machine sets out from thence to the Moon very soon (only waiting at Present to introduce the famous Faustina, who is to make her Entry into the Opera, at the Roof of the Theater, over the Heads of all the rest of the Singers.) Any Person who intends to go this Way, or send any of their Friends, must send their Names before the first Day of June next, and likewise must deposit their Ernest Money, in the Hands of the said Mr. Fawkes, which being one half of the Fare to the Moon, will come to a Hundred and Twenty Five Pounds. The Machinist contents himself with this moderate Price (being only one Farthing a Mile, purely to serve his Country and facilitate the Means of Transportation, having long observ'd, how useful this Project has been to the Inhabitants of this Island."

An additional offering is made for transport to the planets with a smaller, two-passenger model of the machine:

"In the same Place also, may be seen the Planetary Curricule, which is a Vehicle prepar'd only for two Persons, being a lighter Carriage, and very fit for a Couple of Lovers, who have a Mind to spend their Honey-Moon in Venus, and perhaps shou'd take a Fancy to come back again in Haste."[2]

It is unfortunate we do not have the prior or post advertisements or notices of these devices in order to more fully identify them. In any case, judging by the exorbitant fee of £ 125 for the fare to the Moon, as well as other clues, the advertisements appear suspect as being no more than highly imaginative and humorous literary devices, perhaps to call attention to a new play or opera.

A century and a half later we encounter a bonafide space simulation. In fact, it may well have been the first scientifically based simulation of the space environment, if not space travel. In 1892 the "Urania" Scientific Theater of the Carnegie Music Hall in New York City presented a "scientific performance" entitled "A Trip to the Moon," which employed a sophisticated lighting apparatus "regulator" designed for the use of 850 incandescent lamps for "sciopticon illumination." Part of this apparatus was especially made by Siemens & Halske of Berlin to enable three changes of color through eight circuits. J. C. Mayrhofer and his associates were able to project startlingly realistic—for the time—color projections of the Sun and Moon and their eclipses as well as their reflections on water. They also showed the lunar landscape first from a distance of 5,000 miles (8,000 km) and then lunar mountains from 2.5 miles (4 km). A solar eclipse was also viewed from the perspective of the Moon. The show actually had earlier roots and was originally presented in Berlin for three years, from 1889-1892 where it was highly popular as it was in America. But the audiences were still spectators rather than participants. In contrast, Frederic Thompson's "Trip to the Moon" *did* involve the audience and was a pioneering milestone in spaceflight simulation in many other ways. (Figure 1)[3]

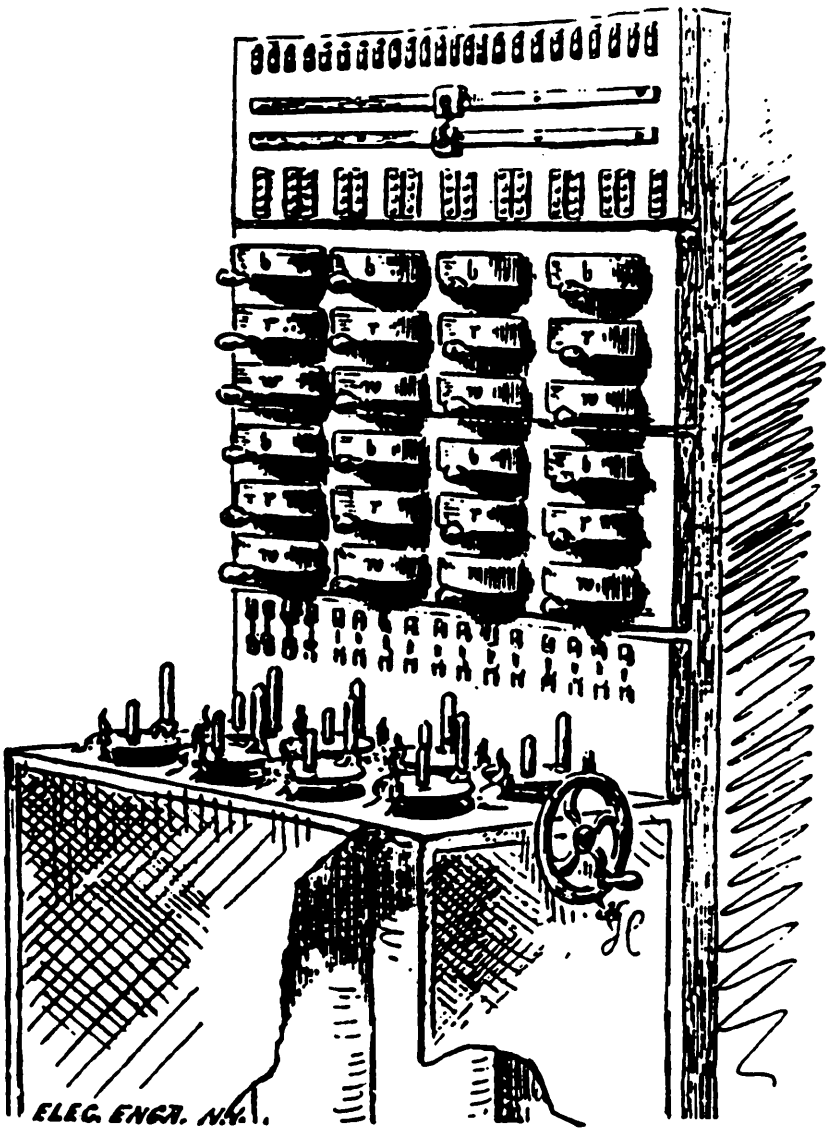

Figure 1 "Stage Regulator," an electrical switching arrangement for producing color changes, made by Siemens & Halske, for the lighting effects for the "Trip to the Moon," presented at the Urania Theater, Carnegie Hall, New York, 1892. (Sketch in *The Electrical Experimenter*, Vol. XIII, 9 March 1892, p. 254).

Creation of Thompson's 'Trip to the Moon'

Born in Irontown, Ohio, in 1872, Frederic Thompson was one of the most inventive and successful producers in American theatrical history. Starting his

career as an office clerk, he had natural artistic talents and studied drawing in the office of his architect uncle, George Thompson, but at age 17 started his own business. He sold building materials and was soon earning over $1,000 monthly. In 1893, Thompson was attracted to the Columbian Exposition in Chicago where he obtained a position as a janitor of a large machinery exhibit. Young Thompson proved himself so invaluable he was placed in charge of the display. The Exposition also opened his eyes to the vast possibilities of the amusement business which he decided to make his life's work.[4]

Thompson and a partner, John J. Dunnavant, built most of the "Midway" concessions for the Trans-Mississippi and International Exposition at Omaha, Nebraska, in 1898. (Exposition Midway shows of the period were family entertainment attractions, often housed in their own thematic buildings or areas, while the main features of Expositions were usually large and ornate pavilions devoted to serious scientific, industrial, commerce or cultural exhibits.) Following the Exposition, Thompson enrolled in courses of study from January, 1899 to October, 1900 at the Art Students' League of New York, under Kenyon Cox, George Bridgman, W. A. Clark and Frederick Dielman. It was during this time that he conceived of the "Trip to the Moon."[5]

In his article "The Making of Coney Island," written in 1907, Thompson provides his own account of how this came about:

> "Like many good park effects the 'Trip to the Moon' idea came by accident in the development and discussion of other subjects. At the time[,] I had been working in my studio, Twenty-sixth Street, New York, on a scheme for the Buffalo Exposition [Pan-American Exposition, Buffalo, New York] called 'Darkness and Dawn,' or 'Heaven and Hell.' I had planned it very elaborately, starting from the Cabaret de la Mort, with its weird surroundings—coffins served by undertakers. People were invited to step into the coffins and turn around in them. From there they were taken in illusion elevators down into the bowels of the earth, and I had planned various trips when they should reach a chasm of fire. How to cross this chasm was a problem; I had several ideas in my head—all of which were unsatisfactory until I hit upon an idea, an airship, and this led to the manipulation of the same. As I solved the mechanical problem it struck me that this was an idea for a show in itself, independent of the other, and I immediately thought, 'Where will I take the airship?' And then it occurred to me, 'To the Moon.' I jumped up, all enthusiasm and yanked a pal out of bed (he was rooming in the studio suite with me), and before he was awake began to tell him I was going on 'A Trip to the Moon.' His enthusiasm encouraged me and I practically developed 'A Trip to the Moon' before I retired that night."[6]

A more dramatic and different account is found in another Thompson article, though was part of the editor's introductory "Note":

> "In the winter of 1900, a student in the Art Students' League in New York, living in a room in which he cooked his own meals, got up in the night because he was so hungry he could not sleep—he had no money to buy

> food. He took his drawing board and worked out a show that became known as 'A Trip to the Moon.' The student was Frederic Thompson, who already had had experience as a showman, and as a designer of exposition building."[7]

Some writers on the history of the American entertainment industry, such as Clarke, favor the second version perhaps because it is more appealing. But since the first version comes from Thompson's own words, it is probably truer. In any case, the idea of space trips or near space trips were hardly new concepts as seen by the titles of plays and books cited above. To these may be added yet more examples, but from Thompson's own period and prior to the creation of his show. They include so-called "Dime Novels," or 10 cent pulp magazines of the 1880's-1890's, carrying stories like: "The Rocket, or Adventures in the Air" (1882); "Jack Wright And His Electric Air Rocket" (1894); "Six Weeks In The Moon" (1896); and "Across The Milky Way" (1896), "The Sinking Star; or Frank Reade Jr.'s Trip Into Space" (1898). In fact, as is documented elsewhere, the late 19th century—during Thompson's youth—there was a blooming of the "modern" scientific genre of science fiction stories in novels and magazines with interplanetary travel themes. One may consult bibliographies like Bleiler's comprehensive *Science Fiction—The Early Years*, cited below, for additional titles. Thompson was therefore very likely exposed earlier, consciously or subconsciously, to the basic notion of a "Trip to the Moon," but what he conceived in 1900 went many steps beyond.[8]

Thompson's concept was an amusement attraction in which people could take simulated rides to the Moon and explore it. In our present Space and Computer Age, we take such attractions for granted and may readily partake these shows in Disney and other amusement parks, but, in 1900, powered controlled manned flight had yet to be accomplished and spaceflight was confined to literary fantasies. Thompson's creation may well have been the forerunner of all the Disney and other amusement space rides of our own times and in a broader sense was perhaps the first spaceflight simulator. It must be emphasized, however, that Thompson's ride was not scientifically-based and was meant for amusement, not educational purposes.

Called a "visionary" and "master illusionist," Thompson was fortunate to form a partnership with Elmer Scipio ("Skip") Dundy, who excelled in business management. Dundy was born in 1862 in Omaha, Nebraska, the son of a judge. The two met at the Omaha Trans-Mississippi Exposition in 1898 and initially were competitors. In 1900, both prepared to enter bids for Midway attractions for the coming Pan-American Exposition, to be held in Buffalo, New York, from May-November 1901. Thompson recognized Dundy's business talents and took his idea to him. "Dundy," says Clarke, "excitedly agreed to join forces [with Thompson]." (Figure 2)[9]

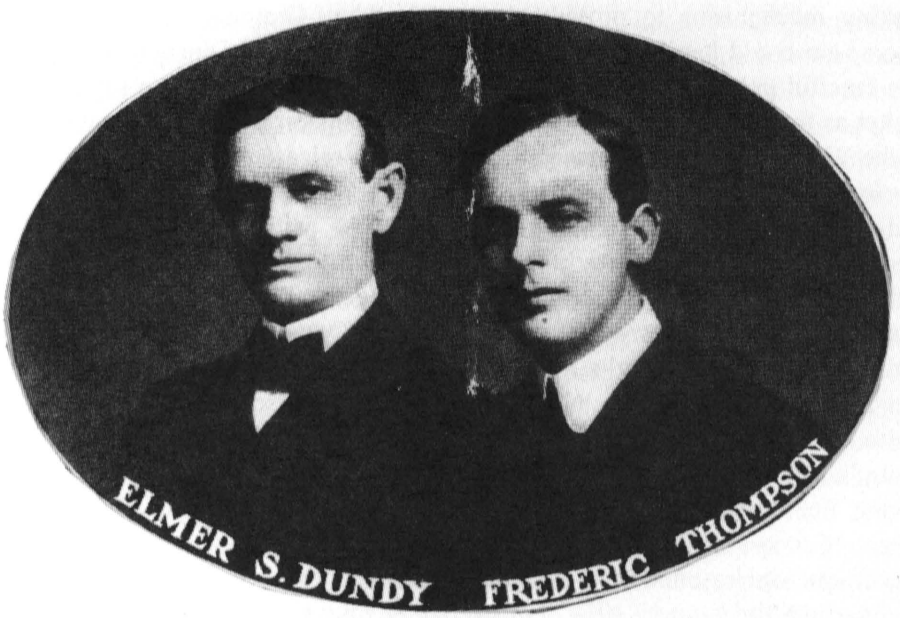

Figure 2 Elmer S. Dundy (1862-1907), left, and Frederic Thompson (1872-1919), partners and creators of the "Trip to the Moon" attraction at the Pan-American Exposition, Buffalo, New York, 1901, later moved to Coney Island, New York. They also created Luna Park and The New York Hippodrome Theater, New York, which opened with the musical spectacle, "Yankee Circus on Mars." Portraits from a Hippodrome souvenir book, 1905 (New York Public Library collections).

On 19 March 1900, listing himself "of New York," Thompson copyrighted his idea which he originally called "A Trip to the Moon on the Air Ship Lunette." Then on 17 April the Pan-American Executive Committee announced it had awarded him a concession for the show which they observed would "doubtless be a great attraction at the coming exposition." On 27 May, the *Buffalo Express* carried the earliest illustrated description of the lunar "Trip."[10]

Among details revealed, the "trips" would be made at intervals of ten minutes and would be by "a combination of electrical mechanism and scenic and lighting effects ... to produce the sensation of leaving the Earth and flying through space amidst stars, comets and planets to the Moon." The attraction was to be located in an immense building—270 ft (82.3 m) long, 225 ft (68.6 m) wide, and 80 ft (24 m) high. The "airship" was to have huge wings "and large propellers" operated by "powerful dynamos." Passengers were "free to go below and see all the machinery in operation" and the building was to be divided into three sections: "The Theater of the Planets," "The City of the Moon," and the "Palace of the Man in the Moon."[11]

The Theater was to house the "monster flying machine, built of steel," with a capacity of 250 persons. At the heart of it was to be placed complicated-

looking mechanisms to provide the craft's "Anti-Gravitational Force." Here, Thompson could hardly be faulted for his lack of technical insight in proposing this fanciful propulsive force as he was a creative showman, not a scientist. The rocket as the most practical means of space propulsion was not to be established in the West until at least January, 1920, with the release of Robert H. Goddard's *Method of Reaching Extreme Altitudes* (1919). Yet the idea of the space rocket had appeared before, in Russia, in Eastern Europe, with the publication of Konstantin E. Tsiolkovsky's article "Issledovanie mirovykh prostranstv reaktivnymi priborami" ("The Exploration of Space with Rocket-Propelled Devices"), in the journal *Nauchnoe Obozrenie* (*Science Survey*) (Moscow) in 1903, and in his earlier science fiction works in which he suggested rocket-propelled spacecraft. Yet for various reasons, including governmental confiscation of the journal because it also carried a defamatory political piece, the circulation of Tsiolkovsky's ideas were limited even in his own country. Apart from this, the science fiction literature of the period heavily favored the fanciful "anti-gravity" approach. Extrapolating from Bleiler's extensive bibliography (Ref. 8), of the 261 spaceflight stories cited in this source, which covers works of this genre from the "earliest times up to 1930...but excluding science fiction pulp magazines of the 1920's-30's," "Anti-Gravity" constituted the largest percentage (23%) of all the fictional methods of propulsion. Further, if we discount the so-called "air rocket" story in the 1882 dime novel given above, the fictional (or factual) notion of the space rocket had not yet arrived in Thompson's period. The concept of the vacuum of "space," let alone flying in space, was likewise unknown to Thompson and the general public. This is why his "space ship" was merely a modified "airship."[12]

Thompson's first plan for his Trip to the Moon building featured a domed lobby "rich in detail and gorgeous in color." After passing through here, passengers were to go down a long corridor then down stairs leading to the ship's "landing dock." While waiting, they were to be told "how the gravitation of the Earth is overcome; how oxygen is preserved in the [ship's] atmosphere, and in a scientific manner..." the guide was to impart "the secret of aerial flight." [*sic.*] The room was dark with the exception of lights simulating the glistening stars and crescent Moon. When all was ready, passengers were to see the approach of the "long conical-shaped machine with projecting decks, and a room for the propelling mechanism suspended beneath its belly. Four huge wings gracefully beat the air and a propeller is working from the stern." Here, it is interesting to note the unmistakable nautical flavor of the attraction.[13]

A gangplank permitted entry onto the ship while the "captain" yelled "All aboard!" The pilot then signaled to the engineer to start up. The passengers were to feel a "motion of quick ascent" and "a strong wind blowing over the bow" followed by an approaching fog, the movement of clouds, and a diminishing ball of the Earth and growing Moon. There were also shooting stars, including a comet almost grazing the ship, and strange "electrical phenomena." As the

Moon approached, voyagers were to see "1,000 snow-clad peaks" and other breath-taking scenery. The landing was to be a "graceful jar." The travelers then found themselves in the "capital city of the Moon" where they were welcomed by the "Pasha of all the Lunatics" who guided them through the strange architecture. Lunar inhabitants were to consist of giants "representing the nobility" and dwarfs who were "serfs." Passing through shops and palaces, travelers were taken to the Palace of the Man in the Moon adorned with crystal columns, a gold lattice dome, and fountains with ever-changing colors. A "giant automaton" (or robot) "with speech and action was to serve as the "Man in the Moon" while before his throne were six "beautiful maidens." At the close of the show, the guide was to lead travelers to an exit door which passed into the lobby leading to the outside.[14]

As it actually materialized, the attraction was modified somewhat from the original plan, mainly the elimination of the domed lobby and giant automaton, probably because of their added expense and complexity in construction. There was also a reduction of accommodations to 30 (68 seats are counted in his later patent of 1903). Otherwise, the general features remained. During the afternoon of 28 July 1900, ground was broken for the Trip to the Moon building which was to occupy 40,000 square feet (12,192 sq/m). It was to be one of the largest buildings on the Exposition's Midway and was situated between the "Glass Factory" and Dundy's giant "Aerio Cycle," a kind of combination swing and Ferris wheel which towered over the Moon building and made it easy to find. The "Trip" attraction was probably the Midway's most expensive to build. It cost $52,000, according to one source (Ref. 4) at a time when the average single-family home sold for $2,000. Other sources say it cost either $80,000 or $84,000. In August, the large trusses for the landing dock were delivered to the grounds, but by mid-September, the building structure was up and strong enough to be only slightly damaged during a severe storm with winds of 78 mph (125 km/hr). (Figures 3 and 4)[15]

Thompson had watchmen guard the building night and day, primarily to insure its interior construction would remain secret until opening day. Meanwhile, he advertised in *The New York Clipper*, a well known show business trade paper of the time, for midgets and giants to act as Selenites for the show. Eventually, the cast numbered 200 and represented a dozen countries. This cast included 30 dancing Moon maidens, 60 "Lilliputians," and 20 giants. (Gaston Akoun, Manager of the Midway's "Streets of Cairo," secured some of Thompson's performers in Paris and also helped generate international publicity.) Thompson announced he would issue a daily souvenir newspaper called the *Luna-tic* but this never materialized. It was also reported that over 20 U.S. and foreign artists were engaged in building the "City of the Moon."[16]

Plans called for the Pan-American Exposition to open on 1 May 1901, but a late-April snowstorm pushed back the inaugural date first to 15 May, then the 20th. The "Trip" was scheduled to debut the same day, but the ship—now sim-

ply called *Luna*—had apparently already been christened with a bottle of champagne over her bow by La Belle Ruby, one of the Moon maiden dancers. Even so, *Luna* still could not "fly." Electricity on this scale of powering the Midway complex was still relatively new technology and the Midway experienced many power failures. Thompson complained of shutdowns five times in one day. Like modern spacecraft, *Luna* herself also experienced last-minute technical glitches.[17]

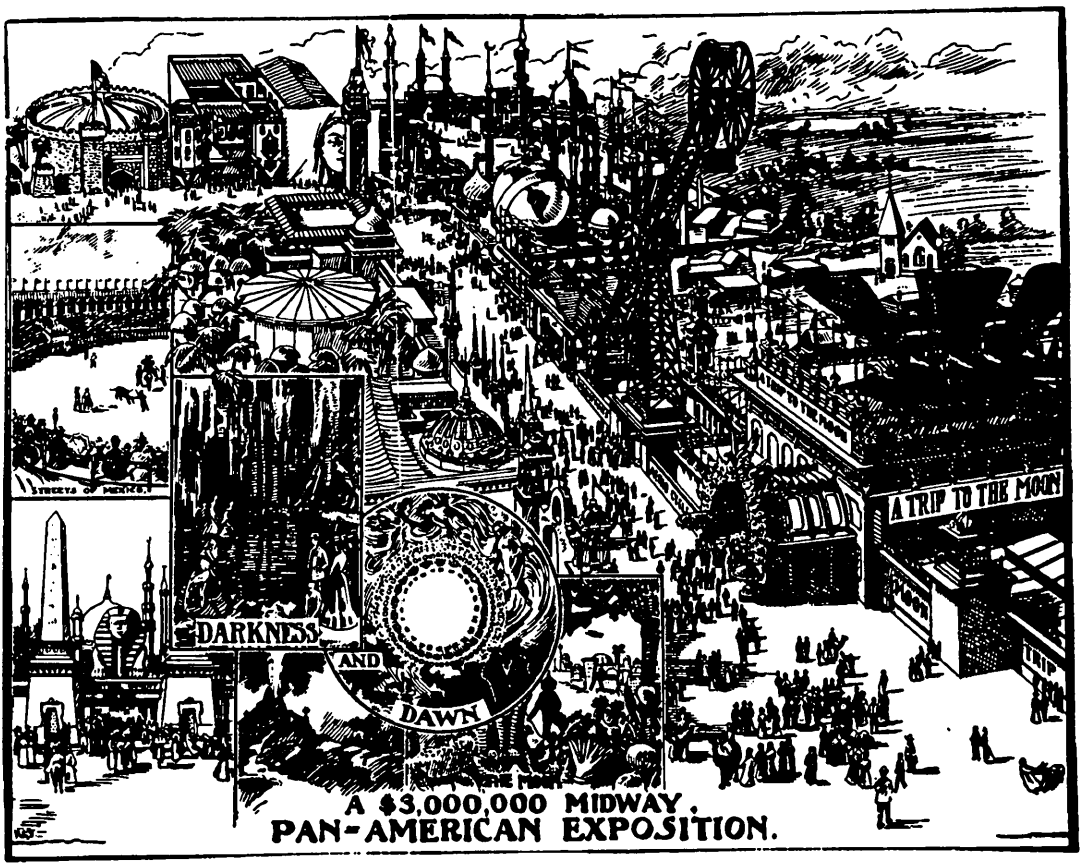

Figure 3 Bird's eye-view of the Pan-American Exposition, Buffalo, New York, showing at right hand corner, the "Trip to the Moon" attraction. (From Frederic Thompson, *A Trip to the Moon* booklet, privately printed for participants of the attraction [Buffalo, N.Y., 1901], from Buffalo and Erie County Historical Society Collection).

Thompson, or his press agent, cleverly disguised the embarrassing problems and at the same time heightened the publicity by spreading tongue-in-cheek stories in the press. *Luna*, reported the *Express* for 12 May, "suddenly broke away from her moorings and soared upward, taking part of the temporary roof of the Trip-to-the-Moon building with her." Three days later, the *Express* announced Thompson's "tearful" joy that the Lick Observatory in California had

located the runaway ship and that it would be ready for Dedication Day. Of course, *Luna* had never really left her moorings, and in fact there had been at least two test runs, one on the 18th and the other on the 22nd. There was also a parade on the Exposition's opening day, 20 May, featuring, among other attractions, two giants and a company of Lilliputians and apparently a scale model of *Luna*. Vice-President (later President) Theodore Roosevelt was among the guests of honor and most likely saw the model and Selenites. Yet *Luna* still failed to launch. The *Express* said this was due to the "non-arrival of certain delicate appliances ... vital to the successful production of the illusion..." While the *Buffalo Courier* reported: "Something went wrong with the electrical contrivances in the Trip to the Moon, and Mr. Thompson had no recourse but to close his doors," though "thousands [had] applied for admission to the airship."[18]

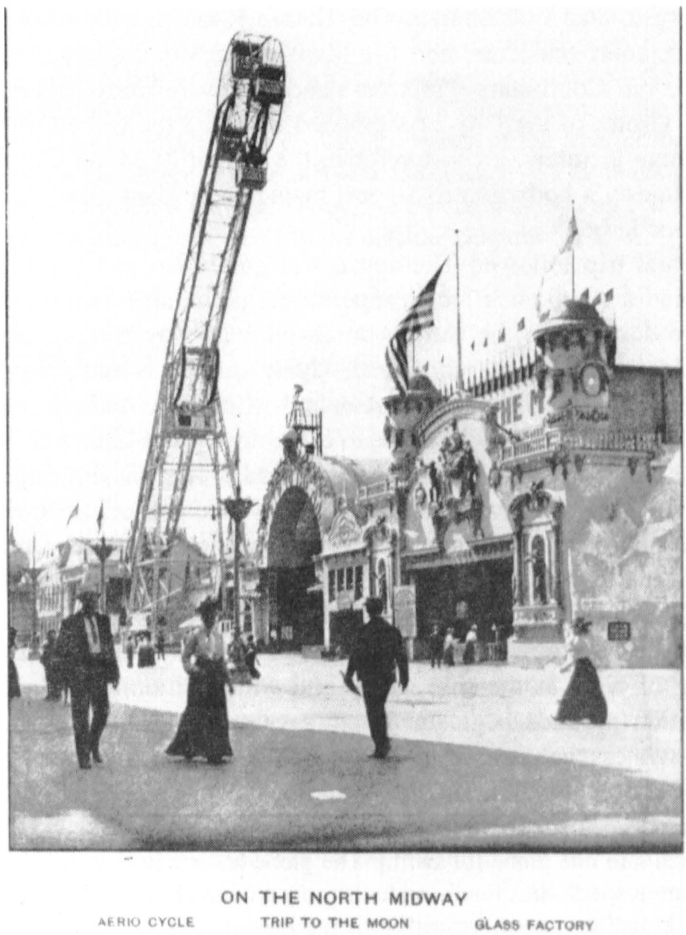

Figure 4 On the North Midway, Pan-American Exposition, Buffalo, New York, 1901, showing the "Trip to the Moon" building, in center. (From Richard E. Barry, *Snap Shots on the Midway* [Robert Allen Reid: Buffalo, 1901], p. 48).

The Trip to the Moon in Operation

Finally, all the pieces came together and at 7 p.m. on 23 May 1901, *Luna* made her first public trip which was declared "eminently successful." From here on, 30 or more 20-minute trips a day at 50 cents per trip (twice as much as other Midway attractions) were afforded by the Aerial Navigation Company, as Thompson styled it. The crew, who all worked on cue, became increasingly more proficient. This crew consisted of the "staff and front," about a dozen people: talkers, electricians, doormen, a box office keeper, an advance agent, an advertising manager (Leroy Pelletier) and the superintendent (F. M. Williams). There were also ten "operatives": a master mechanic, a rigger, another electrician, and a "Keeper of the Moon Calf." There was the Airship's crew of nine: the captain, the chief engineer, a 2nd engineer, purser, a first mate, the boatswain, a steward, and a watchman. The Throne Room had a dozen performers: court dancers, court musician, and the Man in the Moon (Harvey Donaldson). Among the Lunar Court stars ("premier dancers") were Ruby Moore and Hettie Kenton. The Grotto of the City of the Moon included the Queen of the Lilliputians, Lilliputian lecturers, a court acrobat, the Mayor of Moon City, the King's jester, His Majesty's body guard, a court magician, a giant guard of the palace, and a wardrobe lady.[19]

The actual trip followed Thompson's original plan and began as the passengers entered a sumptuous lobby appointed with chandeliers. From here they passed to the dock, "like the waiting-room on a railway station," according to one visitor. In a moment, he continued, "lying quietly in the pale moonlight," could be seen *Luna*, a brilliantly lit green-and-white cigar-shaped craft "the size of a small lake steamer," with a great cabin in the middle, her colossal red canvas wings outstretched "like some huge bird." The passenger came aboard over a realistic "companionway onto a deck very like that of...[a] boat, where he was either ensconced in a steamer chair or allowed to lean on the rail." From the rail jutted out the wings. "Below an artfully lighted panorama of sky," continued this account, "a tiny duplicate of the [Pan-American] Exhibition could be seen ... A gong sounded. The huge wing began to beat the air with slow strokes, and a great rushing of wind as the ship was raised with a straining of heavy cables." "The Exposition grounds begin to drop," says another observer. According to another eye-witness account, by Mabel Barnes, a Buffalo teacher: "The city spreads out below with thousands of blinking lights. Niagara [Falls] is seen..." The scene then:

> "...merges into one globe [of Earth]. The globe lessens in size; it becomes a ball, a mere speck, and finally sinks entirely from sight, and the Luna soars off into boundless space. So perfect is the illusion that one has difficulty in convincing himself that it is only a painted background that is moving downward ... the undulation of the floor of the cabin from side to side, does much to heighten the impression of flying. There comes a storm, flashes of lightning, dusk, peals of thunder, utter darkness ... and then all clears away,

and the ship drops slowly through a sea of sunlit clouds, and the Moon is seen to sink across the line of sight. Rocks and lava pilings, stained red and yellow and green, as though by fire and decomposition, are just ahead. The Luna slows up, veers to the right, and comes to a halt at her landing dock, a yawning hole in the Moon's side, the crater of an extinct volcano. Here we are met by guides who were to conduct us to the wonderful underground city of the Moon.... Fungi, volcanic growths, stalactite droppings ... are displayed... The city of the Moon is reached ... and its inhabitants. These are either midgets or giants. On the backs of the Selenites, the midgets, are rows of long spikes... At the entrance to a long avenue that stretches away with illuminated foliage of fantastic trees and toad stool growths ... two men [high]... A broad moat appears, with a frowning wall beyond, and above it a lofty turret. We were conducted to the throne room where [there] are seats for the visitors from the Earth. Along the sides of the spacious apartment, bronze griffins are ranged; in the center on a throne of mother-of-pearl is the 'Man,' himself. In front is the stage of an electric theater, flanked by dazzling glass columns, between which is a burst of splendor—the Geisler electric fountain. All the colors of the spectrum operate through the running water, and at the height of the display, the maids of the Man of the Moon appear behind and through the rainbow tinted cascade in a rhythmic graceful dance. All too quickly, they fade away, the curtain falls, and an opened door leads to the commonplace world of the outside."(Figures 5 and 6)[20]

In that simpler, pre-radio and television age, when the public got its entertainment largely from vaudeville and the embryonic motion picture industry, Thompson's production was an astounding technical and artistic achievement that delighted all. It consequently received excellent reviews throughout the Exposition which closed in November, 1901. The American entertainment industry's major journal, *The Billboard* for 21 September typically observed: "The Trip to the Moon is a great success, and could make a great deal more money if it had the capacity. The mistake was made in constructing a building with so small a capacity for visitors."[21]

Thompson was well aware of the originality of the technical side of his attraction and consequently took out a patent on *Luna*, U.S. Patent 725,509 simply titled "Scenic Apparatus," but applied for as late as 15 November 1902 and granted 14 April 1903. Although an amusement device, it may well have been the first "spacecraft" ever patented. Technically, Thompson termed the craft a "rocking platform having wings to represent an aerial ship." On the platform was an open "deck-house," passenger seats, and a fixed, braced wooden mast rigidly held by guy wires connected to the building. On top of the mast was a cap which oscillated on a ball bearing connection. From the cap were also extended cables or rods to various parts of the deck or frame of the ship. When the deck was at rest, it was anchored by anchor-cables, but when the anchor cables were released from their stakes, a rocking motion was imparted to the deck by a

manually operated rope. The ball bearing connection and cables and rods facilitated the rocking to the whole. (Figure 7)[22]

Figure 5 The "airship" *Luna* above Niagara Falls, on the way to the Moon. Promotional drawing for "The Trip to the Moon" attraction, Pan-American Exposition, Buffalo, New York, 1901 (From Buffalo and Erie County Historical Society Collection).

On each side of the deck were sets of six triangular wings "connected by bagging or sagging material ... painted to give atmospheric effect." These wings, pairs of which were connected to each other by rope or light wire cables, were arranged to swing on a frame connected by a pulley to a drum. A floor or canvas below the apparatus was "painted to represent the ground and buildings thereon..." At the ends of the decks were electric fans for producing the wind effects. At opposite sides of the building were a series of fixed and vertically moveable screens, the moveable ones "painted to give the effect of different strata of clouds." The three "inner screens at each side are painted to illustrate the Moon and its phases, while the outer one is painted to give Earth effects." The three inner screens moved at different rates of speed by means of a motorized drum, ropes with different numbers of turns around the drum, and pulleys.

A system of straight and crossed belts connected to the drum caused the scenic screens "to move in opposite directions to give the effect of ascending or descending." Ordinary shifting levers altered directions.[23]

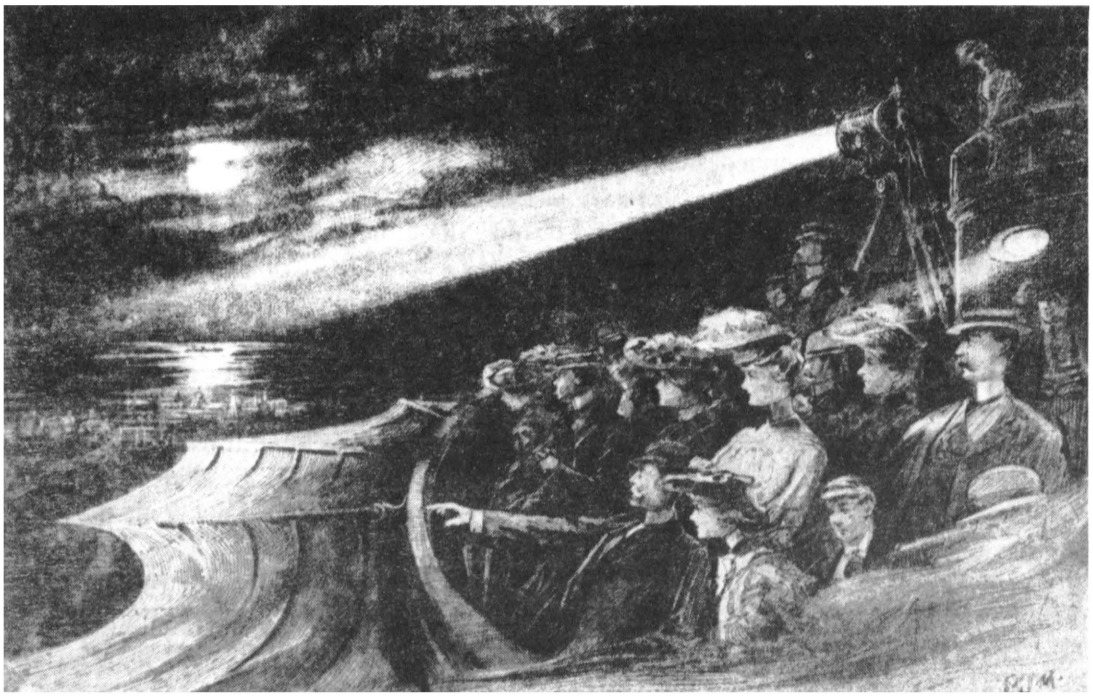

Figure 6 An artist's conception of the "Trip to the Moon" ride in Luna Park, Coney Island, New York, 1903. One of a series of postcard scenes (Courtesy, Paul Brigandi, Greenlawn, New York).

At the base of the fixed screens were electric lamps of different colors connected to a switchboard to work out "various effects." Other effects were produced by stereopticons, presumably with double lights to produce dissolving views, while a buzzer helped simulate the sound of a howling wind. The patent does not cover effects outside *Luna*, like the near grazing comet, lightning, a flying upper atmospheric creature, and mobile Moon calf. Thompson also copyrighted seven scenes on (or in) the Moon, including the Moon castle, different views of the gorge and streets on the Moon, and the Moon "Theater."[24]

The Trip to the Moon attracted attention, far and wide, and many notables of the day came to ride it. One of the first was Chauncey M. Depew, railroad magnate and U.S. senator from New York. Depew, a quick wit, was especially taken with the strange upper atmospheric monster that flew close to the ship after the fierce electrical storm. The creature, which made an awful screech, supposedly looked like a cross between "a turtle and a gigantic bat." "'Well, now what was that?' asked the Senator," the papers reported. "'That's the melithricturna,'" answered Thompson who accompanied the party, "'He's a brother

to the ichternasturnia.'" "'Yes, I've heard of both those creatures,' Depew responded. 'They serve them at Delmonico's [a well known New York restaurant]. They're pretty fair eating too.'" After the performance, Depew, who had befriended every president since Abraham Lincoln, remarked to Thompson, "This is the most original and wonderful production I have ever seen in all my travels." U.S. Secretary of War Elihu Root also took the Trip and after landing back on Earth was asked if he thought airships could be used in warfare. "If they are all as successful as this one," he replied, "they would work very well." The Secretary described the ride as "elevating," a term Thompson quickly adopted in his advertising. Secretary of State John Hay was so enthralled that when in the throne room of the Man in the Moon, he sent for Thompson and gave him a $20 bill "for distribution among the inhabitants of the Moon" as a token of his appreciation. Senator Thomas C. Platt from New York called the show's creator a "genius," while General Nelson A. Miles, the commander of the U.S. Army and the man who had captured the famous Apache Indian chief Geronimo, back in 1886, asked questions throughout the ride and judged it "a wonderful idea cleverly worked out." (Miles was to make three trips on *Luna*.) Ambassador Wu Ting from China was especially intrigued by the midgets and wondered "where they came from, how they enjoy life, and how long they live."[25]

It is not known if Nikola Tesla, the famed, though eccentric, electrical inventor rode it but it he was certainly aware of it. He visited the Exposition in late March, before it opened, and in July wrote to Thompson that he had received a communication from Mars and had seen one of *Luna*'s voyages and that they had "waved their pocket handkerchiefs at the Moonshiners."[26]

No less than the famed inventor Thomas Edison saw the Trip to the Moon. This was on 31 July and he expressed his "wonder and delight" over its "electric miracles." Edison personally congratulated Thompson's electricians. The Edison Company later made a series of documentary films of Midway attractions, including the "Trip to Moon" [*sic.*], released in June, although this film no longer exists. However, in the collections of the Library of Congress' Division of Motion Pictures and Recorded Sound, the author has viewed a brief scene of the Trip building in another of Edison's documentaries, "A Trip Around the Pan-American Exposition" (1901).[27]

It appears that President William McKinley became the first—and only—U.S. president to have visited the Moon, via Frederic Thompson's *Luna*. It is not known exactly when he made the trip but most likely it was on the evening of his first day at the Pan-American Exposition, on 5 September 1901. Following a packed day of attending receptions and delivering an address, the President and Mrs. McKinley were escorted to the Exposition grounds. One of Thompson's publicity brochures, published two years after the event, quotes McKinley as saying: "A Trip to the Moon is ideal. It was the most marvelous experience of my life." On the following day, 6 September, the President completed another

address, at the Exposition's Temple of Music, and was shaking hands when a crazed anarchist, Leon Czolgosz, shot him. McKinley died eight days later. Afterwards, Thompson strongly endorsed a plan of raising money for a memorial to McKinley, a bronze statue of the fallen President, to be placed near the place of the assassination, to be paid for by the gross receipts of all the concessionaires on a Sunday. In the case of Trip to the Moon this would have amounted to $1,500-$2,500, but the plan was not adopted.[28]

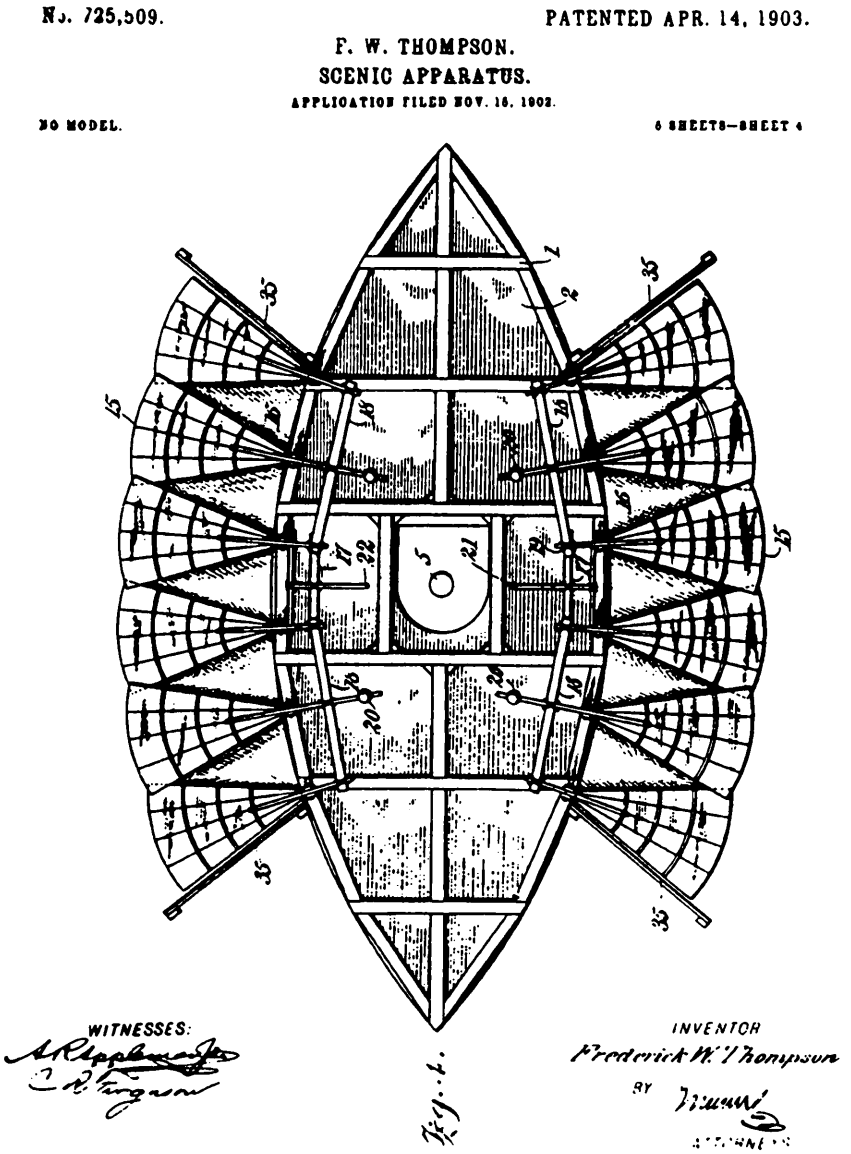

Figure 7 Patent for the *Luna* type ship, to Frederic Thompson, U.S. Patent No. 725,509 of 14 April 1903, simply titled "Scenic Apparatus." Ironically it was perhaps the first patent taken out for a spaceship.

Despite the great tragedy and a period of mourning in which the Exposition was closed, it re-opened and Trip to the Moon continued to be a success. By October, its seating capacity was said to have been doubled. Overall, some 400,000 people (another reference says 500,000) visited it, including enthusiastic repeat customers and it was claimed that every member of the U.S. Cabinet had gone, as well as several governors, diplomats, and most justices of the Supreme Court. *Luna*'s final trip from Buffalo was made close to midnight on 2 November but Thompson had already been toasted by the midgets who had played the Selenites and was presented with a diamond-studded match box in appreciation.[29]

Thompson and Dundy's Trip to the Moon had grossed $122,703, among the highest of the Midway concessions and the partners were now determined to exploit it further. In late September, *Billboard* reported that this "spectacular piece" would go "on the road, and it is now making dates. Forty people will be with the show." In fact, a version of the show had already been on the road, as a carnival attraction with the Bostock-Ferari Midway Carnival Company. It is more curious that this smaller, portable version, had been travelling with Bostock-Ferari since April—earlier than the Pan-American Exposition. Unfortunately, no details of this arrangement have been found, though *Billboard* for 6 July states that the carnival Trip to the Moon was "the same one in use at Buffalo," while *Billboard* for 23 November only described it as, "an electrical conception." It is known that Frank C. Bostock was running Bostock's Trained Wild Animals show at the Pan-American Exposition at the same time he was a partner with Francis Ferari in the Bostock-Ferari Carnival, so we can assume Thompson had already made an agreement at Buffalo fairly early with these two men. At any rate, the carnival opened at Shreveport, Louisiana, on 22 April 1901, and closed in Chattanooga, Tennessee that November.[30]

Trip to the Moon (and Mars) at Coney Island

So far as is known, Thompson and Dundy did not pursue their own road show version of Trip to the Moon and the show itself was prepared for storage, piece by piece, to take to St. Louis, Missouri, for the coming Louisiana Purchase Exposition of 1904. Dundy had already gone to St. Louis to bid for his own concession while Thompson went to New York. "We virtually separated for a time," Thompson later recalled. "I then started a deal with George Tilyou, who owned Steeplechase Park at Coney Island, [the seaside resort of New York City] for a space for 'Trip to the Moon,' our great attraction," he continued. "Dundy did not like the scheme, but he did come to New York—with the avowed intention of breaking up the Coney Island deal and inducing me to go to St. Louis with him. I prevailed upon him, however, and we began construction in January, 1902." Under the arrangement Thompson and Dundy was to receive

60% of the net and Tilyou 40%. Leroy Pelletier, who had been The Trip's brilliant advertising manager at Buffalo, was named as the manager of the Steeplechase version, though he may not have taken up this position as he is said to have entered the automobile industry at this time.[31]

A ceremony was held for the launching of *Luna II*, as Thompson called it, at Steeplechase on Saturday, 12 April 1902, in which the daughter of the local Police Commissioner christened the ship which was said to have been "much larger and more powerful" than the original. Its operation was to begin the following day. Shortly after, on 26 April, the famed Brazilian aviation pioneer, Alberto Santos-Dumont, came to Steeplechase "especially to make the 'Trip to the Moon,'" and was applauded when he went in and expressed his "pleasure and satisfaction with the delusion [*sic.*]," it is reported. Since Santos-Dumont had visited Edison at Orange, New Jersey, on the 13th, it is possible he might have learned of the ride through Edison who may have recommended it.[32]

Little else is known of the operation of the Steeplechase incarnation of Thompson's Trip to the Moon. Although, during the same year, another carnival company featured a Trip to the Moon attraction. This was the Gaskill-Munday (or Mundy) Carnival Company of Frank W. Gaskill and Percy J. Munday which, like Bostock-Ferari, toured more than 20 towns (from Indiana to Texas). Whether there was any connection between Thompson and Dundy and Gaskill-Munday is unknown, but in any case, a remarkable trend from the original Trip to the Moon had already begun in the form of portable carnival versions and flourished up to the late 1920's, while more permanent "Trip to the Moon" and "Trip to Mars" attractions in their own buildings were erected in a few amusement parks and lasted as late as 1931; a "Trip to Venus" show also appeared. (This included yet another version of Trip to the Moon at Luna Park, which lasted from 1925-1931). These latter iterations were discovered in subsequent research and this is why Part 2 of this paper continues the later phase of the Trip to the Moon shows is covered only up to 1915.) In any event, the carnival versions of "The Trip" had their own history and already by late 1902, a variation of the theme, a Trip to Mars attraction, was featured in the Oriental Carnival Company, playing in South Carolina, Virginia, and elsewhere.[33]

Other possible spin-offs of The Trip may have been some of the first space fiction films. As early as April, 1901—a month *before* the opening of the Pan-American Exposition, and a year prior to Georges Méliès' acclaimed "first" spaceflight movie, *Le Voyage dans la Lune* ("A Trip to the Moon"), released in Paris about May, 1902, Sigismund Lubin of Philadelphia advertised his film *The New Trip to the Moon*. Regrettably, the film no longer exists and we only know from the advertisement that it ran 1,500 ft (457 m) and was "Something entirely new ... full of magic and startling effects." While in October, 1902, Lubin was advertising a second film, simply titled *Trip to the Moon*, of 1,200 ft (365 m). Could Lubin's *New Trip to the Moon* have been the result of his observation of, or visit to, Thompson's Trip to the Moon while preparing his own "Cineograph"

concession on the Midway, not far from the Trip to the Moon building? We may also speculate if he used any of Thompson's scenery or had Thompson's help? However, we may never know the answers to these questions because Lubin's Philadelphia film plant and library were destroyed in a fire in 1914 and the advertisements of his films are the only evidence found thus far on Sigismund Lubin's hitherto unknown, but possibly pioneering movies. On the other hand, Hardy (following research conducted by George C. Pratt of the George Eastman House) says that Lubin pirated Méliès' space films and added new titles along with additional material, accounting for their greater lengths, although there is no question Lubin's advertisement for his first space film, "New Trip to the Moon," appeared a full year prior to Méliès' 1902 classic.[34]

During October, 1902, Méliès' *Le Voyage dans la Lune* (with English title) was available in the United States but had no connection with Thompson's show in its origin, although in early November, Thomas Edison released his own movie on the same theme, *A Voyage to the Moon*—which may have been influenced by *both* Méliès, his competitor, and Thompson, since he had personally taken in Thompson's Moon trip attraction.[35]

Meanwhile, despite an exceptionally rainy season during Coney Island's 1902 season, Thompson's Trip to the Moon ride continued to enchant the crowds and "proved very profitable," Thompson recalled, "and ... we soon gave up all idea of going to St. Louis and directed our efforts to finding a larger field on Coney Island." According to McCullough, Tilyou actually maneuvered Thompson and Dundy into seeking a new location on Coney Island since this would also attract crowds to Steeplechase and be beneficial to the whole island. Tilyou knew Thompson and Dundy were "aggressive, imaginative partners," said McCullough, and that he could not keep them. He thus offered "a renewal of their contract in which their share of the net was sliced from sixty to forty per cent." "They glared at him," McCullough continues, while Tilyou grinned back pleasantly. Thompson and Dundy told Tilyou they would let him know of their answer within a few days. When they returned they told Tilyou they were negotiating with Paul Boynton to buy Sea Lion, another of Coney Island's amusement parks, and would indeed build their own park, but on a far grander scale.[36]

Borrowing nearly $1,000,000, most of it reportedly from the gambler-financier John "Bet-a-Million" Gates, Thompson and Dundy created the spectacular, 38-acre (15 hec.) Luna Park, then the greatest amusement park ever seen. Why was it called "Luna Park?" It is widely held it was named after Dundy's sister, Luna, yet the 1903 Thompson and Dundy brochure, *Luna Park The Electric City By The Sea*, which depicts the now famous Luna airship gracefully sailing over the park toward to the Moon, says: "It was but right in the naming of the property acquired by Messrs. Thompson & Dundy ... in honor of ... the Airship Luna. It was through this same spirit that, in the laying out of the grounds, A Trip to the Moon was placed at the main entrance..." Weinstein similarly observes the new park was "appropriately called, in view of the top

billing given to their famous illusion ride, Luna." He also called Luna "history's first theme park." In this sense, New York's Luna Park was filled with many unique and spectacular mechanical rides and the Trip to the Moon was its crown jewel.[37]

Thompson used one of his park elephants to haul the Trip to the Moon show, or parts it, from its Steeplechase location at Surf Avenue and 17th Street to its new home, Surf and West 12th Street at Luna's entrance, facing the beautiful Luna Court, with its fairyland-like minarets, spires, thousands of lights. The park opened on 16 May 1903. In actuality, the Trip had been remade at a cost of $52,000 and the building took on a different look to match its new architectural surroundings. *Luna* (now called "*Luna III*") seems to have retained the original configuration but may have been enlarged to accommodate more passengers. During the show, she also passed over the panorama of Coney Island, Manhattan skyscrapers, and the surrounding sea. Another change was the Selenite guide leading the passengers down the jaws of the Moon calf where they were tossed down a jerking pathway until the exit to Luna Court. Otherwise, the basic features, the midget and giant Selenites and so forth, remained. There were, however, turnovers of performers as Thompson and Dundy still advertised for midgets. The Joseph Menohen Company, Electrical Contractors and Electrical Supplies, of 1237 Broadway, New York, furnished the "Automatic Lightning Flashes" for "The Trip to the Moon" at Luna Park. Besides Siemens & Halske who were responsible for the electrical effects for the 1892 "Trip to the Moon" presentation described above, the Menohen firm is thus one of the earliest known special effects companies that contributed towards a spaceflight simulation production.[38]

The success of Luna Park was phenomenal. In its first four months receipts were $ 5,000,000 and attendance in 1904 reached nearly 4,800,000 during the season from May to September. Attendance figures are not available for the Trip alone but it too must have soared to the millions since the attraction remained at the park until as late as 1907. Typical *Billboard* comments were: the Trip to the Moon was "packed at each performance" and the Trip did an "enormous business." Theodore Waters, writing in the nationally circulated *Harper's Weekly* magazine rightly pointed out that the show "is utterly unreasonable from any scientific standpoint," but otherwise liked the presentation. Others attempted to imitate the Thompson and Dundy magic and other "Luna Parks" sprouted in about a score of cities, some overseas, from Sydney to Mexico City. Ironically, none seem to have adopted A Trip to the Moon, because Thompson refused countless offers for its reproduction in both the U.S. and foreign countries, but it was costly anyway and required the showmanship genius Thompson epitomized. It appears Luna Parks even exist today, doubtless their owners unaware of the origin of the name.[39]

Thompson and Dundy did so well they used their huge Luna Park profits to launch another venture, building the New York Hippodrome Theater, then the

largest theater of its kind. The Hippodrome opened in New York on 12 April 1905 with the lavish musical, also with a kind of space theme, "A Yankee Circus on Mars," written by George V. Hobart, and afterwards played in Chicago and Boston. Thompson undoubtedly owed much of his success to Dundy, his friend and partner who kept Thompson's extravagant ways in check. But Dundy died unexpectedly in 1907. Saddled with mounting debts and without Dundy, Thompson began drinking heavily. Luna Park still prospered though the same year marked the close of Trip to the Moon—the "nucleus of the Thompson & Dundy fortune," as *Billboard* put it. The reason was not one of waning popularity, but Thompson's periodic remodeling and adding newer attractions to the park. In place of the Trip building came the attraction The Monitor and the Merrimac.[40]

But in 1910 there was reanimation of Luna and a return of the Trip back into its former and enlarged building and under a new title. It was now named "A Trip to Mars by Aeroplane," reflecting the growth of aviation and Thompson's new-found air-mindedness especially since he had flown as a passenger with the well known aviator of the day, John B. Moissant. The reincarnated Trip (sometimes mistakenly called Trip to the Moon by Aeroplane) was another instant hit when it helped open Luna Park's 1910 season on 14 May. Costing $50,000, it was "on the same order as the 'Trip to the Moon' illusion," said *The New York Times*, except on "a much larger scale and will furnish more thrillers than did the older show." In place of *Luna* was a "giant airplane" of the Curtiss type with seating for 100. In the show, it departed from Governor's Island, New York (a popular airfield), flew over the city in a race with Farman and Wright biplanes, a Bleriot monoplane and Zeppelin, then went to a port on Mars and returned, encountering storms and other terrifying astronomical and atmospheric phenomena enroute. Reviews of the ride in *Billboard* and elsewhere were all highly praiseworthy (The "Trip to Mars ... holds the record for popularity," "...there seems to be no zenith to [its] ... popularity," "Thompson has far outdone his former illusion, A Trip to the Moon," and so on).[41]

Yet Thompson continued to experience serious monetary and other troubles. His alcoholism grew worse. In 1912, he divorced his young wife, the prominent actress Mabel Taliaferro, and he had already lost financial control of the Hippodrome and Luna Park. The year 1912 also saw the final closing of the Trip; the building was now taken over by "Capt. Louis Sorcho's Deep Sea Diving Show." Some Coney historians say the Trip had finally lost its novelty. On the other hand, the Trip to the Moon's astounding success had led to more than 50 carnival companies creating their own, smaller "Trip to the Moon," "Trip to Mars," "Girl in the Moon," and even "Trip to Venus" attractions. These are covered in Part II of this paper, presented at the 47th IAF Congress, held in Beijing, China, during 7-11 October 1996 (Paper IAA-96-IAA.2.1.03, to be published in a later Proceedings).[42]

Thompson had plans to resuscitate Trip to the Moon once more, for inclusion into his Toyland Grown Up show at the Panama-Pacific Exposition to open in San Francisco in February, 1915, but there is no evidence it ever materialized there. Thompson was now in decline and after a succession of illnesses, he died in 1919. Coney Island too went into decline through hard economic times and a succession of fires. On 13 August 1944 and 12 May 1947, fires destroyed Luna Park's remaining buildings, allegedly including the one that once housed The Trip to the Moon. Today, the area is called the Luna Housing Project. The Trip to the Moon may have been a non-scientific and naive simulated venture into space, but its popularity proved there was a remarkably high interest in spaceflight at the turn of the century and offers us a new perspective in the history of popular culture and spaceflight (Figure 8).[43]

Figure 8 Commemorative Apollo 16 postage stamp from the Manama Dependency of Ajman, 1972, depicting a *Luna* craft flying to the Moon. The year 1972 also marked the hundredth anniversary of the birth of Frederic Thompson, originator of the "Trip to the Moon" craft (Courtesy of Ron Miller, King George, Virgina).

Acknowledgements

The author wishes to acknowledge his appreciation to Randy Liebermann who helped start the project (see Note 42 below); Mary Bell and Patricia M. Virgil of the Buffalo and Erie Country Historical Society for their indispensable help in making the Pan-American Exposition scrapbook, photos, and other material available; John Manbeck, Borough Historian of Brooklyn, New York for invaluable data and photos on Coney Island; Paul Brigandi, for the privilege of using documents and photos from his wonderful collection of Coney Island memorabilia; *et al.*

Explanatory Notes

1. Earlier, Chao Hsueh Min's *Hou-Hsi Lueh* (*Outline of Pyrotechnics*) of ca. 1753 advised how skyrockets could impart motion to large "flying sets" in plays, including the legendary "five old men" returning to heaven. There were also plays like "Mars and Venus," produced in 1697 by Gottfried, Finger, and John Eccles, which were based upon mythology but did not include a voyage to other worlds or the upper reaches. George Frederic Handel's play "Orlando," produced in 1733 and adapted from Lodovico Ariosto's epic poem *Orlando Furioso* (1516), probably did use a contrivance or set piece to depict the chariot drawn by four red horses that took Orlando to the Moon. Yet the above list of space plays and the foregoing titles is not meant to be definitive but sufficient to provide a background. This survey is also useful in showing that space plays, particularly early ones, may be divided into two categories: those featuring mechanical or other theatrical effects to convey the illusion of travel to the planets or Moon, and others featuring "astral," or non-mechanical means. Hayden's opera, for example, fits the latter, since a potion was the means of planetary transport.

3. A review of this show may be seen in *The New York Times* cited in Ref. 3, and dates for the performances are found in George C. C. Odell, *Annals of the New York Stage* (Ams Press: New York, 1949), Vol. XV, pp. 185, 187, 374, 476, 477. A brochure was printed on the show but it has not been available to the author.

Another possible pioneer of theatrical spaceflight simulations may have been the Cincinnati artist and stage set designer John Rettig who, in 1895, copyrighted "A Trip to the Moon [and Mars] or other planet in an elevator tower; a panoramic illusion," but nothing has been found in his extensive extant papers to show if these concepts ever materialized.

The Archives of Neuilly, France, has a curious example of stationary, dating to 1898, with a letterhead depicting a Ferris wheel type carnival ride called "Voyage dans la Lune" ("Voyage in the Moon"). Auguste Gombault is given as the "Director" of this attraction. If the ride actually existed, it would have hardly rated as a simulated space ride but does show another type of predecessor of later amusement park space rides. For an illustration of this device, see Py (Ref. 3), p. 280.

4. The introduction in Ref. 6 says Thompson was the son of Captain Frederic Thompson, "famous as an inventor and student," but nothing has been found to corroborate this. Thompson's second wife, interestingly named Selene (like the ancient Greek goddess of the Moon), announced in a published letter to *The New York Times* for 17 February 1929 that she intended to write a biography of her colorful husband but never did since she died that May. (Her obituary, which is mainly about Thompson, is found in the *Times* for 7 May 1929.)

8. To these literary works may be added the 1896 story—which the impressionable young Thompson may have also heard—of attempted manned rocket flights by "Prof." W. W. M'Ewen

up to at least the upper atmosphere, as reported in a major New York newspaper and probably elsewhere. See: "To Travel A Hundred Miles A Minute—Prof. M'Ewen of Michigan Will Make A Rapid Transit Experiment On A Sixty-Foot Aluminum Skyrocket And Take Up Excursion Parties Later On," *New York Journal*, 26 July 1896, Sunday Supplement, p. 17. See Clarke (Ref. 8), pp. 20-21 for details on the initial competitiveness between Thompson and Dundy.

10. Dundy's name does not yet appear in conjunction with Thompson's and they therefore may not have formed their partnership as yet, though Dundy is listed as an awardee of another concession, the "Aerial Cycle," a giant seesaw with a Ferris wheel at both ends. It is important that at the same time, Sigismund Lubin was granted a moving pictures concession for the Midway (see "Trip to the Moon (and Mars) at Coney Island" Section of this paper).

12. The journal *Nauchnoe Obozrenie* was also generally unavailable in the West. It presented a language problem and was always printed in limited numbers. Tsiolkovsky was a school teacher in the provincial town of Kaluga and many of his writings were self-published, which he could barely afford, and therefore had limited circulation in Russia, much less circulated elsewhere.

Others, like Hermann Ganswindt of Germany, also proposed reaction propulsion for spaceflight during the 1890's to early 1900's but had less impact than Goddard and Tsiolkovsky.

15. Thompson's own rendered illustration of the original version of the outside of the "Landing Dock on the Earth of the Aerial Navigation Co.," showing the dome over the lobby may be found in *The Journal of American Industries* (Buffalo), special Pan-American Exposition issue, Vol. III, February 1901, p. 18, while on the same page is Thompson's rendition of the "airship" *Luna* in space.

16. Colorful publicity stories about the midgets also abounded, for example: "Strange People On The Midway," *Buffalo Commercial* 16 May 1901; "Midgets have love Affairs," *Buffalo Express*, 18 May 1901; and "Another Tom Thumb," *Buffalo Commercial*, 3 June 1901. It should be noted too that the use of midgets in theatrical space productions was not new. A popular team of actors called The Lilliputians starred in the four act "Grand Spectacular" "A Trip To Mars," in New York, Boston and probably elsewhere in 1893-1894.

18. Apparently this model was sometimes placed upon the roof of the Trip To The Moon building and enlarged in promotional drawings, misleading many to believe it was the actual airship ready for take-off to the Moon. (See Figure 3 in this paper). The *Express* for 25 September called it a "working model," and said it had just finished a 2,000 mile (3,220 km) advertising trip. Thompson was also in the parade.

19. The "Moon calf" was perhaps introduced by Thompson in late July or early June and may have been an influence of the Moon calf featured in H. G. Wells new novel, *The First Men In The Moon* (1901).

20. According to Kasson *et al.*, another feature was when the Moon maidens gave bits of green cheese to the passengers as souvenirs since the Moon was allegedly made of it. McCullough says the midgets gave the samples.

24. The patent was witnessed by Dundy. For an unknown reason, Thompson took out the copyrights earlier than the patent, on 17 July 1901.

26. Other famous personages of the time who went to the Exposition and may have taken in the Trip were: John Jacob Astor, author of *A Journey in Other Worlds* (1894); Vice-President (later, President) Theodore Roosevelt; future Prime Minister Winston Churchill who was at the Exposition 3 July; Sigismund Lubin, the movie pioneer, cited in this paper; Annie Oakley; Sarah Bernhardt; William Jennings Bryant; Calamity Jane; Booker T. Washington; Geronimo; John Philip Sousa, who regularly performed at the Exposition; Henry Cabot Lodge, and Victor Herbert.

27. In mid-August, Thompson proposed sending a message to McKinley to visit Trip to the Moon, using a heliographic system of relays of searchlights from the Exposition's Electric Tower to McKinley's home at Canton, Ohio, but this plan fell through.

30. Thompson and Dundy also let in many thousands of people in Trip to the Moon gratis (i.e. school groups, notables, etc.).

In the 1901 season, the Bostock-Carnival Company went through about 25 cities with average populations (based on the 1900 U.S. census) of 51,000, or 1,271,957 total. Even if only 15% of this number visited the smaller version of Trip in the Moon, it would have amounted to an additional 190,800. The data is compiled from known itineraries in the *Billboard* throughout 1901 and exact census records of these towns are found in the *American Newspaper Annual* for 1901 (N.Y. Ayer & Son: Philadelphia, 1901).

31. Pelletier himself had an interesting career, having covered the Klondike gold rush in Alaska as a *New York Times* reporter before he came to Buffalo. He afterwards became Henry Ford's first advertising manager and earlier had started his own car firm in 1903, The Duquesne Motor Car Co. of Buffalo. He is also known to have been associated with Thompson's Luna Park at a later period.

34. It is widely held that Lubin's *A Trip to the Moon* [or *Mars*] (1899) and *A Trip to Mars* (1903) were pirated versions of Méliès' *La Lune à un Mètre* (*The Astronomer's Dream*) (1899) and *Voyage dans la Lune* (1902), respectively, though there is still an uncertainty as to originality of Lubin's *The New Trip to the Moon.*

36. The brochure *Luna Park The Heart of Coney Island* (1903) for the opening of the park, says A Trip to the Moon had already received 1.25 million visitors but it is not clear if this was only at Steeplechase or dated from the Pan-American Exposition.

37. There are numerous sources on the history of Luna Park. Weinstein (Ref. 37) is one of the best analyses of its various transformations and comparison to Disneyland.

38. The brochure *Seeing Coney* (Ref. 38) calls the airship "*Luna IV.*"

41. The number 100 appears correct on the seating capacity though accounts vary widely and claim 30, 200, and even 300.

42. Knowing that the Trip attracted at least 400,000 at Buffalo in 1901 and extrapolating from the attendance figure cited in the Luna Park brochure (Ref. 37), it is probable the Trip attracted at least 850,000 in the 1902 season at Steeplechase, 4,250,000 at Luna from 1903-1907 and, as Trip to Mars, 2,500,000 at Luna from 1910-1912, or 8,000,000 total—a conservative estimate. These shows also generated a certain amount of merchandising, though this is not documented. The author was first made aware of a Trip to the Moon aluminum lapel pin (1901) shown to him by Randy Liebermann which inspired this research. In addition, there were Lowney's chocolate boxes with a Trip to the Moon theme (1901), Trip to the Moon (and Mars) tags (ca. 1901-1912) given out at the attractions, Pan-American playing cards including a Trip to the Moon card (1901), and Trip to the Moon brochures.

A popular version of the study of Thompson's Trip to the Moon was co-authored by Frank H. Winter and Randy Liebermann as "A Trip to the Moon," in *Air & Space Smithsonian* (Smithsonian Institution), Vol. 9, No. 4, October/November, 1994, pp. 62-67, and features color pictures of the lapel pin and tags.

Still another spin-off from Thompson's Trip to the Moon appeared, first in 1916, then especially from 1920 when his second wife (and then, widow), Selene, helped establish what was called "Thompson's 'Fly-a-Way.'" It was billed as a "fully patented" "Electro-Mechano-Scenic Production" of his original apparatus to simulate, also for mass audiences, the flight of an "immense airplane" from New York to the resort town of Atlantic City, New Jersey. Details are found in *Billboard*, Vol. XXXII, 13 November 1920, p. 81, with ads appearing from that time until 1923. For some of these ads, which allude to Thompson's "Trip to the Moon," see the issues of (Vol. XXXVIII) 14 July and 21 July, 1923, on pp. 76 and 79, respectively.

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