IV. Review: The Earliest Moon Mission

BOOK REVIEW

Jules Verne: The Inventor of Astronautics

by Charles Notley

June 25, 2020

The Annotated Jules Verne, From the Earth to the Moon: Direct in Ninety-Seven Hours and Twenty Minutes.
Rendered and annotated by Walter James Miller
New York: Thomas Y. Crowell, 1978
171 pages with many original prints

Circling the Moon*, contained in a collection of works by Verne titled *Amazing Journeys: Five Visionary Classics: Journey to the Center of the Earth; From the Earth to the Moon; Circling the Moon; 20,000 Leagues Under the Seas; Around the World in 80 Days
Translated with critical material by Frederick Paul Walter.
Albany, NY: SUNY Press, 2010
668 pages with some original prints

Anything one man can imagine, other men can make real.

—Jules Verne

Science is the process of moving what's in the mind, into physical reality.

—Lyndon H. LaRouche, Jr.

1. *From the Earth to the Moon*

The Setting

It is April 1865. The War of the Rebellion has just ended. When it began, most families on both sides had hoped (and expected) the fighting would last only a few months, at most. As hostilities dragged on, popular sentiment became resigned to the endlessness of it.

At long last it was over. For four grueling years, war had consumed life and property. Over 600,000 mothers' sons had killed each other on their own nation's soil with a fury unmatched before or since, until General Robert E. Lee's surrender at Appomattox Court House. To preserve the Union and secure the peace, one of our greatest Presidents, Abraham Lincoln, had given his last full measure of devotion.

It was, finally, a time for reconciliation and reconstruction. A Frenchman offered a unique vision of how to heal the nation, by engaging the living in an interest both common and higher.

Written during the war years, by September of 1865, all of France was reading Jules Verne's *De la terre* à *la lune* (*From the Earth to the Moon*), ultimately taking its place as Book No. 4 in a series known as *Voyages Extraordinaire.* English-language translations, published in London, soon made their way to America. This extraordinary story, and its lesser-known sequel, *Autour de la lune* (*Circling the Moon*), VE No. 7, published five years later, was to launch the scientific careers of almost every rocket scientist in the world ever since.

Unfortunately for English-language readers, the contemporary London-published translations of Verne's novels, that still, today, serve as the "standard" editions, are generally quite rotten, suffering from massive errors: abridgement, translation errors, miscellaneous inaccuracies, re-writing, embroidery, stylistic changes, ideological censorship—to name but a few. Among the particularly notorious English translators

are Lewis Page Mercier (Louis Mercier) and Eleanor E. King.

Fortunately, new editions by American translators are being published, far truer to the original French, revealing a Jules Verne *hitherto unknown* to English-language readers. Via the two editions cited in this review that are among those newer translations, let us relate his story, hoping the telling will ignite your interest in these and perhaps other great Verne works.

The Story Begins

In the largely deserted rooms of the Baltimore Gun Club (BGC), its war veteran members are depressed in their "tedious unemployment." Now that the war is over, these designers of artillery are all out of work. There appears to be no further purpose to their existence:

> "This is so demoralizing," said brave Tom Hunter one evening. His wooden legs, resting on the fender of the fireplace in the smoking room, were slowly charring. "Nothing to do! Nothing to live for! What a bore! Where are the days when we were awakened every morning by the joyous sounds of war?"
>
> "Those days are gone forever," replied the spirited Bilsby. He tried to stretch the arms he no longer had...."

Illustration from the 1872 edition

War veteran members of the Baltimore Gun Club, depressed in their "tedious unemployment."

Into this this ambience of disconsolance steps Club President, Impey Barbicane, who proposes the construction of a giant canon, the dimensions of which the world has never seen. Instantly he has the attention of the Club's members. They will now have something to do again, something they are good at. But Barbicane appends a novel twist to his proposal: The canon will not be used as a super-weapon to kill and destroy, but rather to shoot a projectile to the Moon! This, by the way, is the origin of the phrase "Moon shot."

In Chapter V, "The Romance of the Moon," Verne sets the stage for the voyage to come, whetting his readers' interest with a discussion of the evolution of the universe, the Milky Way Galaxy, and our solar system. He surveys the history of astronomy, from mythology to then-current science of the Moon.

In the chapters that follow, Verne takes the reader-transformed-into-eager-learner through the challenges presented by the project: Will it work at all? The (almost) universal support for it. The history of lunar observations and the latest relevant scientific findings. He titles Chapter VI "What it is Impossible Not to Know and What it is no Longer Permissible to Believe in the United States." The reader will learn all about cannon balls (in Chapter VII, "The Hymn to the Cannonball"), cannons (Chapter VIII, "The Story of the Cannon"), and propellant options (Chapter IX, "The Powder Question), and the choice of launch location (Chapter XIII, "Stony Hill").

Then, the narrator:

Now that the astronomical, mechanical, and geographical problems had been solved, there loomed the question of money. This project would cost an enormous sum. No private individual, and no national treasury, could afford to finance this experiment.

Urbi et Orbi

So, how *is* the funding accomplished? Here is an example of how the mind of Jules Verne worked, as expressed through the narrator:

> Although it was an American experiment, President Barbicane decided to make it a global enterprise, and to ask for the financial cooperation of all peoples. It was both the right and the duty of the whole Earth to intervene in the affairs of her satellite.

Gaspard-Félix Tournachon (Nadar), c. 1878

Jules Verne, master composer of science novels, not science fiction, continues to inspire a great passion in his readers for exploration and discovery.

The "right and duty" of all mankind! The project becomes the common aim of mankind. And to let everyone know what Verne thought about money as such, in Chapter IX ("The Powder Question"), as different explosives are being considered for propulsion, we have this interchange:

> "Perfect," observed the major.
> "The only trouble is, it costs more."
> "And who cares?" cried J.T. Maston.

Verne is here revealing his philosophy about money: that it is the *physical cost* which matters, not the *money cost*.

Subscription booklets are printed and distributed. Curiosity and optimism combine, and money begins to flow in from all corners of the world, including the Papal States (Verne was raised a Catholic)—save one: England. The Greenwich Observatory "strongly denied any possibility of success." The narrator (Verne) hurls a scathing polemic at the backward British, laughing at the outcome:

> We have seen how [England] belittled Barbicane's project. The English have but one soul for the 25 million inhabitants of the British Isles. They implied that the BGC enterprise was contrary to "the principle of non-intervention," and so they subscribed not one farthing.

No money for a revolutionary science experiment? Non-intervention (no meddling, à la *Star Trek*) by the British Empire in the affairs of other countries?! Really? "When they heard this news from England, the BGC members shrugged their shoulders and returned to their great mission."

Who is Jules Verne?

Born in 1828 in France's Atlantic seaport of Nantes, by the time death stilled his hand at age 77 in 1905, Jules Verne had produced 67 full length novels, 23 novellas, 40 theater plays and operettas, nine volumes of literary criticism and non-fiction, numerous poems and song lyrics, and a multitude of published interviews and correspondence. Some of his novels and novellas were completed after his death by his only son Michel.

Writing to his father in 1862 about Edgar Allan Poe's story *The Balloon Hoax,* Verne remarked that he would strive to use realistic characters and a plausible use of science to impact his stories. For the rest of his life, he followed his own good advice, situating his adventures in a descriptive and realistic style, with many name references to real people, actual locations, and hard science, coherent with the new spirit of the second half of the 19th Century, a time characterized by a scientific and technological explosion in metallurgy, aerospace, steam-powered engines and electricity; not to mention astronomy, electrodynamics, chemistry, thermodynamics, and electromagnetism. He presented science, not as dull and abstract as in a school textbook,

but always in the context of people inside life, solving real world problems and overcoming challenges encountered in exciting adventures, accompanied with lots of humor.

When read together, the *Voyages Extraordinaire* novels transport the reader—in his or her imagination, if not physically—almost everywhere: to almost every country on the surface of our planet, underneath its seas, down to its center, up into its skies and out into the space beyond. In Verne's words, "I painted the Earth."

The Story Continues

Now, back to our story.

Where does the BGC elect to construct the *Columbiad*—for that's what they name their giant cannon? Where, indeed, would be the best place in the United States to do so? What location did NASA choose 100 years later? You're right! Cape Canaveral, Florida. Verne sites the *Columbiad* cannon at Stone's Hill in "Tampa Town," Florida, just 137 miles from NASA's launch site 100 years later! How did Verne know this would be the best place? And why did the BGC (and NASA) consider, but reject, Houston? Read the book.

Verne now teaches us all about the round-the-clock construction of the great cannon, titling Chapter XV "The Festival of the Casting." He can do this because this novelist personally is an expert in metallurgy. As the molten metal is being poured to form the barrel of the giant cannon sunk in a 900-foot deep well the workers had dug, Verne (as narrator) remarks:

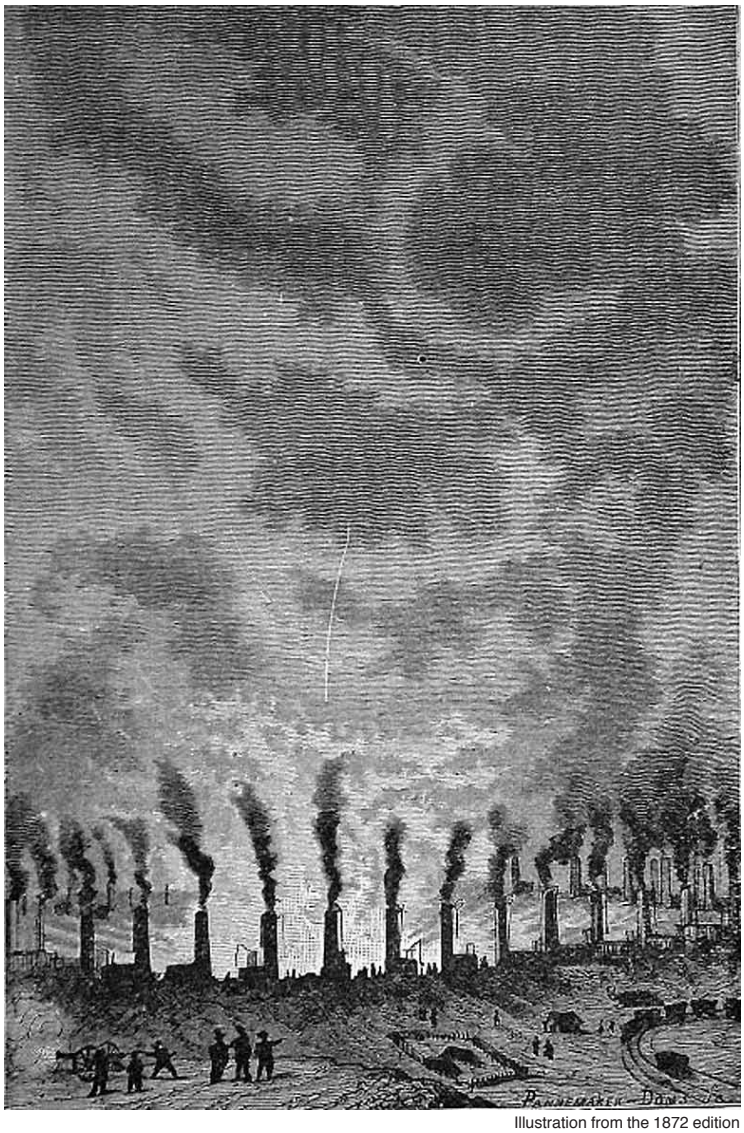

Illustration from the 1872 edition

"The Festival of the Casting" of the Columbiad*, the world's largest cannon, conceived to unite mankind, not destroy it.*

> The ground trembled as cascades of molten metal, sending whirls of smoke toward the sky, volatilized the moisture in the core-mold, and sent it through the vent-holes in the stone revetment in the form of dense vapors. The artificial clouds spiraled toward the zenith, reaching a height of 3,000 feet. [Some] would have thought a new [volcanic] crater was being formed in the heart of Florida, but there was neither eruption, nor tornado, nor tempest, nor clash of the elements, none of those terrible catastrophes nature is capable of producing. No! It was man alone who had created these reddish vapors, these gigantic flames worthy of a volcano, these loud tremors like the shock of an earthquake, these reverberations rivaling the sound of hurricanes. It was his hand that had flung—into an abyss he had created—a whole Niagara of molten metal.

A Mysterious Telegram

Construction is interrupted, however, upon receipt of a mysterious telegram by cable from France: "Replace the spherical shell with a cylindro-conical projectile. I shall be inside when she leaves. Arriving on steamer *Atlanta*," signed by one Michel Ardan, "an ec-

centric, a witty and daring showman."

The first permanent transatlantic undersea cable connecting Europe and North America, which would have allowed such a telegraphic message, wasn't actually laid until 1866, *one year* after publication of this book! And, in an example of Jules Verne's playfulness, "Ardan" is an anagram for "Nadar, a reference to his real-life friend Gaspard-Félix Tournachon, the famous photographer, caricaturist, journalist, novelist, balloonist and proponent of manned flight, who is better known by his pseudonym Nadar.

Upon the arrival of Michel Ardan, and his inclusion as passenger in this Moon shot, we have an example of a Franco-American alliance for a common good. Ardan insists that the projectile be re-engineered to accommodate himself for the voyage. Barbicane insists, of course, that he too must go, so now it's two.

Again, Verne, as narrator:

> Nevertheless, Michael Ardan's proposal, like all new ideas, did trouble a few minds. It upset their usual patterns of thought. 'How is it that no one ever thought of it before!

In 1865, the idea of putting two adults in a cannon projectile and sending them off to the Moon does bust a few axioms all right. Does the idea of sending astronauts to the Moon by 2024—via NASA's Artemis program—bust any of yours?

At a mass meeting of the curious ingathered under a huge tent, Michael Arden addresses the crowd:

> Gentlemen … you are free to express your reactions to what I say.… This voyage must be made sooner or later, and as for the means of locomotion, that simply follows the law of progress.

Later on, in the same speech of Ardan, we are treated to this stunning passage:

> My dear listeners, if we are to believe certain narrow-minded people—and what else can we call them?—humanity is confined within a circle of Popilius from which there is no escape, condemned to vegetate on this globe, never able to venture into interplanetary space! That's not so! *We are going to the Moon,* we shall go to the planets, we shall travel to the stars just as today we go from Liverpool to New York, easily, rapidly, surely, and the oceans of space will be crossed like the seas of the Moon! Distance is only a relative term, and ultimately it will be reduced to zero. [Emphasis added.]

Later still, in the same speech, Verne has Ardan say:

> To me, the solar system is a solid, homogeneous body, the planets that compose it are touching, pressing against, adhering to each other, and the space between them is no more than the space that separates the molecules of the most compact metal, silver or iron, gold or platinum! Distance is an empty word, distance does not exist!

The polemic against those who advise against going into space, was expressed 100 years later by the German-American rocket scientist and pedagogue, Krafft Ehricke in his notion of the Extraterrestrial Imperative. NASA's slogan for the Artemis program of returning humans to the Moon and Mars, is "We are going!" And, to speak of distance as relative and that distance will be reduced to zero are concepts from Albert Einstein's Relativity Theory. Mankind will be able to travel to the stars only when we are able to "reduce the distance to zero."

And Now There Are Three

An old enemy of Barbicane, Captain Nicholl of Philadelphia, a designer of plate armor for defensive weapons, also out of work, shows up at the construction site and declares Barbicane's entire enterprise absurd.

Verne uses the introduction of Nicholl into the story as an opportunity to express his own view of war. Narrator:

> Everyone has heard about the strange struggle that developed during the Civil War between the projectile and the naval armor, the former designed to pierce the latter, the latter built to resist the former. This struggle led to radical changes in the navies of two continents. The projectile and armor plate fought with unprecedented intensity, the former growing bigger, the latter growing thicker. Warships bristling with awesome armament moved into battle covered with invincible armor. The *Merrimac,* the *Monitor,*

the *Tennessee,* the *Weehawken* first protected themselves against projectiles, and then hurled huge projectiles at their enemy. They did unto others what they would not have others do unto them, an immoral principle that is the basic premise of the art of war.

A footnote by Walter James Miller:

With this bitter parody on the beliefs of Christian war-makers, Verne criticizes not only the Americans but also the hypocritical policies of the ruling monarch of France, Emperor Louis Napoleon. "The Empire means peace," Napoleon III said when he assumed imperial power in 1852. Two years later France was at war with Russia in the Crimea, in 1859 declared war on Austria, and in 1862, invaded Mexico. As Verne is writing this novel, the Mexican adventure is in serious trouble and Napoleon's intrigues in Europe are luring France into catastrophe.

A few years after his novel is published, Verne wrote his father complaining that Napoleon's militaristic policy "takes us back to the times of the Huns and Visigoths" and offers "the prospect of a series of stupid wars."

Capt. Nicholl makes a series of bets with Barbicane on the impossibility of sending a projectile to the Moon. Ultimately Barbicane and Nicholl resolve to settle matters between themselves by duel. Maston, the BGC Secretary, intervenes vainly to stop it, crying out to Nicholl, "I am the friend of [Barbicane], his alter ego, his second self; if you want desperately to kill someone, kill me, it will be exactly the same thing."

Maston's intervention fails (as it must), as Nicholl replies, "Between Barbicane and me there is a rivalry so great that only the death of one of us—."

It is the *Frenchman,* Ardan, who resolves the matter by appealing to a *higher principle:* he challenges Nicholl to join Barbicane and himself in the projectile where the three of them will put their lives on the line in a common scientific pursuit. Nicholl, as you might imagine, accepts, and thus Verne adds a third personality and skill-set to the enterprise.

The fact that now France and the United States would set off together to conquer the lunar continent, combined to make Michael Ardan more popular than ever.... There was not a citizen who did not identify with him, body and soul. *E pluribus unum.*

The President of the Union confers citizenship on Ardan, just as President Washington had earlier conferred the same honor to a French compatriot, the Marquis de Lafayette.

Maston, who has a metal hook for a right hand, and gutta-percha covering a large hole in his head as rewards for his military service, begs Ardan to let him be the fourth passenger in the projectile, and receives this reply:

Suppose we meet inhabitants up there on the Moon. Would you want to give them a depressing picture of what happens down here, telling them what war is, that we spend our time devouring each other, breaking each other's arms and legs, and all that *on a globe that could nourish one hundred billion inhabitants,* and right now has one billion two hundred million? Come, come now, my good friend, you'd make them throw us out! [Emphasis added.]

In 1865, the world's population was indeed about 1.2 billion. Verne's anti-Malthusian view that the Earth could support 100 billion people doesn't conform to today's anti-scientific greenie outlook. One hundred years later, we have yet to live up to Verne's morality or population forecast.

Shortly before the big day, an experiment is conducted to test the "shock of departure" on life in the projectile. For this purpose, a cat and a squirrel are placed inside a hollow projectile, which is inserted in a 32″ mortar and fired. Upon recovery, the hatch is opened, and the cat, obviously in good health, bounds out. But no squirrel is found. The cat had eaten the squirrel!

This little story of the cat and squirrel, having fun with science, has us laughing about what is otherwise a very serious scientific experiment. One hundred years later, both the United States and the Soviet Union first tested space launches with animals, before sending up humans.

To great fanfare, with five million people watching, after a 5-second countdown (actually a count-

up), a switch is thrown sending an electric current that sets off 400,000 pounds of guncotton, causing the projectile with its three intrepid explorers to be blasted off. "Ground Control," or, more precisely, Ground Observation consists of a special very large telescope constructed in the Rocky Mountains. Verne even inserts an entire chapter on the differences between reflecting and refracting telescopes. At this point he has gotten you to *want* to learn all about telescopes.

Once the projectile has exited the barrel of the *Columbiad,* the flight is largely but not totally ballistic. The projectile is provisioned with 20 tiny *rocket tubes* ("retro rockets," in today's parlance), to be used to slow descent during the projected landing on the Moon, and to lift off the Moon to return to Earth. For this, they are able to burn oxygen, located in the projectile's base, in the vacuum of space.

Illustration by Émile-Antoine Bayard and Alphonse de Neuville, 1872

The original "Moon shot." Columbiad *firing its projectile carrying the world's first three astronauts.*

What happens next? For that, Verne's readers had to wait five years for the sequel. But you don't.

2. *Circling the Moon*

Circling the Moon, first published in 1869, continues where *From the Earth to the Moon* had left our three "astronauts"—and thousands of engaged and engrossed readers—somewhere out in space on their way to the Moon.

It is not long (in Chapter 4, "A Little Algebra"), before Verne presents his readers with the mathematical formula that *accurately* describe the velocity required in order that the projectile escape Earth's gravitational pull.

> Barbicane: "You wanted algebra and now you're in it up to the neck."
>
> Ardan: "I would rather be hanged by the neck."
>
> Nicholl: "As a matter of fact, this strikes me as nicely worked out. It's the integral of the momentum equation, and I'm sure it will give us the desired result."
>
> Ardan: "But I want to understand it! I'll put in ten years of a life ... if it'll help."

Like most school children, Ardan hates math. Would he, or the reader of the day—or you—have expressed that same curiosity and demanded to learn the meaning and value of those equations if encountered in a school textbook? However, in the discussion among the trio here about the direction and velocity of the projectile, *in which they all currently reside,* Ardan confesses he really *does* want to understand.

In the next chapter, Barbicane is discussing with Ardan the vast number of atoms in the universe and the distances between them in matter:

> Ardan: "So, [scientists] have measured and counted all those fluctuations have they? These ... are typical scientific figures—they grate on the ears and people can't relate to them."
>
> Barbicane: "But you have to work with figures—"
>
> Ardan: "No, you don't. You're better off comparing them to something."

Here Ardan turns the tables on Barbicane, by going back to the ancient Greek method of *comparison* and what is known as *constructive geometry,* rather than resorting to counting or measurements.

In the next hours, as the voyagers contemplate their fate—whether they are on course, going too fast or too

slow, etc.—various conundra arise, creating a tension in the dialogue and in the mind of the reader that act as a kind of "tractor beam" pulling the reader into participating in those discussions, perhaps silently volunteering answers themselves, getting "ahead" of the dialogue. Verne cleverly leads the discussions (and the reader) into a point where the answer as to why their calculations indicate they are off course cannot be answered by anything they already think they know, much as Meno' slave in Plato's *Meno Dialogue* cannot figure out how to double the area of the square, until he relinquishes his current understanding, for a new view of the problem.

The Mission, and Return to Earth

Facing the near-term prospect of death (while elucidating the difference between parabolas and hyperbolas) as a very likely outcome of their precarious circumstance, Barbicane injects a *sense of mission*:

> My friends, I don't know where we're heading, I don't know if we'll ever see Earth again. Nevertheless, let's proceed as if our research will someday benefit our fellow mortals. Let's forget all our worries and free up our minds. We're astronomers. This shell is a workroom.… Let's start our investigations.

Fourteen pages later, Verne returns to the lesson he has just provided, by having the narrator say:

> These stouthearted men were above such concerns, that they didn't bother with trivia, that they had other things to do besides worrying about their future lot in life.

And, on page 300, comes a third boost to sagging spirits. As the three are arguing over whether the projectile will have enough speed to break free of the Moon's gravitational pull and be able to return to Earth, and whether there is anything they could do to make this happen, this exchange ensues:

> Nicholl: "There's nothing to be said."
>
> Barbicane: "There's nothing to be done."
>
> Nicholl: "Are you claiming you can fight the impossible?"
>
> Ardan: "Why not? We're a Frenchman and two Americans—we should sneer at the very word [impossible]."

Happily avoiding calamity, and upon reaching the vicinity of the Moon, the three commence their research, using such tools as a hypsometer, a spyglass with a reticular eyepiece with two parallel crosshairs (to measure shadows of mountains, *à la* Galileo Galilei), and a micrometer—now with tremendous diligence, observing the lifeless surface using opera glasses, and otherwise making *true and accurate* remarks about it. Unlike sci-fi writers who at this point would proffer fantastic—made up—visions of what was to be found on the Moon, Verne, holding to his promise to his Father "to strive to use realistic characters and a plausible use of science," has his characters report only on what is *already known* (if not necessarily by a general audience).

One example, of many: In discussing whether life exists on the Moon:

> [Narrator]: Out of the three kingdoms sharing the planet earth, only one was represented in this lunar world: the mineral kingdom.
>
> "Oh drat!" Michael Ardan said, looking a little flustered. "Isn't anybody home?"
>
> "Not so far," Nicholl replied. "No human beings, no animals, no trees. After all, we still haven't any way of knowing if there's air hidden deep in those cavities, inside those basins, or even on the other side of the Moon."
>
> "Besides," Barbicane added, "even for the keenest eyes, a human being isn't visible more than 4-1/2 miles off. So, if any moon people exist, they can see our projectile, but we can't see them."

Verne doesn't completely discount the possibility of life on the Moon. Rather, he leaves such a discovery to future explorations by the future grown-up young readers of his story!

Just in case all the hard science is getting too much for the reader, Verne throws in this thought-provoking observation. Speaking of Ardan's insistence that he had seen though his telescope "evidence" of a ruined fortress and a town, Verne has the narrator say:

> He made all this out, but with such imaginative eyes and through such a fanciful spyglass that we're forced to take his findings with a grain of

salt. And yet, who could claim, who would dare insist, that the dear boy hadn't actually spotted a few things his two companions *weren't willing* to see? [Emphasis added.]

Not "hadn't seen," or "missed," but "*not willing*" to see. Isn't that precisely the source of all invention and discovery—to see something no one else was able or willing to, and to bring it into existence?

After a number of hours of observations and reportage, including some time spent transiting the dark far side of the Moon, in a stretto, the gravitational pull of a passing asteroid alters their ballistic trajectory in such a way that, instead of landing as planned, their capsule slingshots and escapes the gravitational pull of the Moon and returns to Earth.

"Splashdown" is in the Pacific Ocean, where they are picked up by a U.S. Navy vessel, and are welcomed home to great fanfare. As news of this fabulous voyage is telegraphed around the world, big celebrations and banquets are held everywhere.

The story concludes with the establishment of a limited partnership company bearing the name National Interstellar Transportation Company, capitalized at $100 million, with stock at $1,000 per share. Nowadays, instead of relying on a private company, it's time for all countries committed to spacefaring to establish an International Space Agency to carry mankind into space.

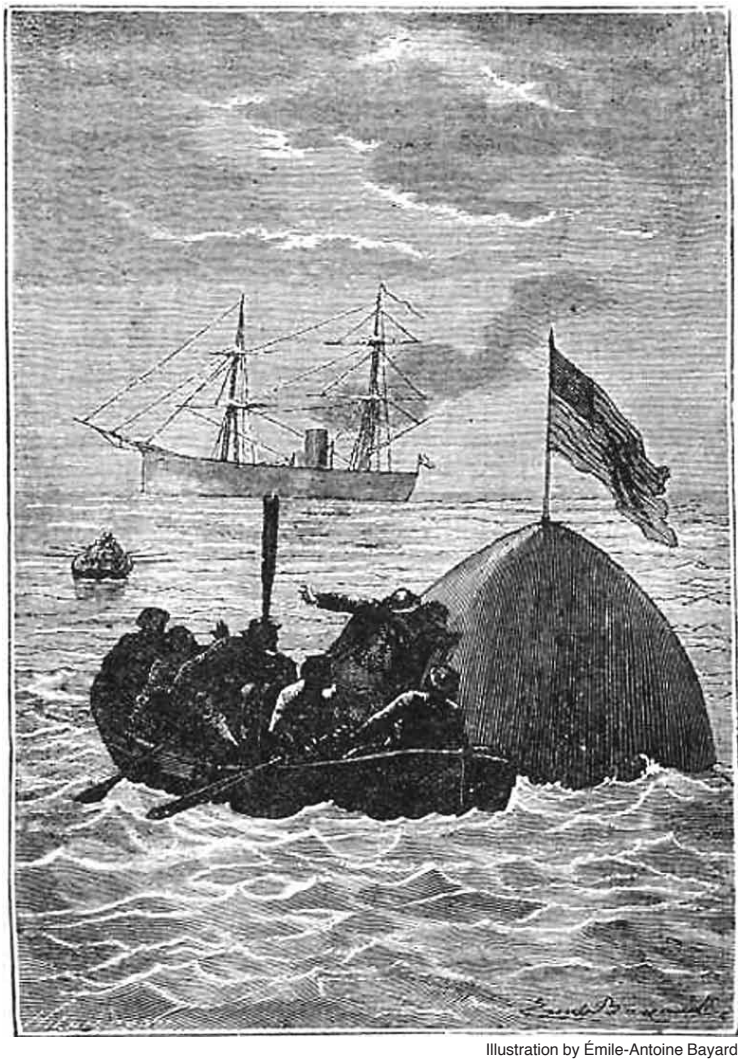

Illustration by Émile-Antoine Bayard

Splashdown and recovery in the Pacific Ocean, only a few miles distant from where NASA's Apollo Moon mission capsules returned to Earth 100 years later.

Science, Not Fiction

Unlike almost every writer of science fiction dealing with the wonders of an imagined future civilization, Verne never once pandered to mentally and morally backward desires for "the amazing," magic, or miracles. He once said:

> I have always made a point in my romances of basing my so-called inventions upon a groundwork of actual fact, and of using in their construction, methods and materials which are not entirely without the pale of contemporary engineering skill and knowledge.

Verne's own term for his writings in this genre was "*roman de la science,*" usually translated as "science novel." A better translation, one that I believe Verne would approve of, is "science romance," reflecting his intention to inspire a great passion in his readers for exploration and discovery—for science—with stories that engage the imagination of his readers. "What one man can imagine, another can make," he is often quoted as saying. For generations, Verne's pedagogical method has produced a wildly successful coupling with his readers' learning aptitude.

He spent countless hours at the *Bibliothèque Nationale* (National Library) in Paris, reading everything available in French (for he knew very little English) on the latest explorations and scientific discoveries.

Verne discussed the latest theories in astronomy, ge-

ology, engineering, and physiognomy with leading scientists whom he met at the home of Jacques Arago, a famous world traveler. At the *Cercle de la Presse Scientifique* (Scientific Press Circle) the discussions frequently turned to the viability of lighter-than-air *vs*. heavier-than-air aircraft. It was at the *Cercle,* somewhere between 1860 and 1861 that he and his brother Paul met, among many other scientists of the day, Gaspard-Félix Tournachon, whom we have met earlier.

From 1864, when in Paris, Verne attended sessions of the *Société de Géographie*, delivering occasional lectures to that body. In 1872 he enlisted in the Amiens Academy of Sciences, Letters and Arts, attending nearly all sessions, twice being elected Director. He became Secretary of Tournachon's Society for Encouragement of Aerial Locomotion by Means of Heavier-Than-Air-Craft, and was a member of the Industrial Society; he chaired meetings of the Horticultural Society, and, along with Louis Pasteur and Ferdinand de Lesseps, was a co-founder of the *Alliance Française*.

It is a lie and a slander, therefore, to say or write that Verne was a science fiction writer, and blend him in with the morally depraved and culturally depressed likes of H.G. Wells, Isaac Asimov, George Orwell, or Ray Bradbury.

When once asked by a reporter what he thought of *The First Men in the Moon,* Wells' 1901 story of a voyage to the Moon, Verne snapped back: "Show me the metal," referring to the (altogether fictional) gravity-blocking cavourite. In other words, whereas Wells, and the rest of the sci-fi crowd require the non-existent—magic—to propel their tall tales, Verne relies on real science.

For example, Verne is so confident in his science, that his subtitle for *From the Earth to the Moon* is "Direct in 97 Hours and 20 Minutes." How did he know that? More importantly, he has, even in the title, provided his readers with a hard, scientific fact that they can use in real life, whereas Wells has only fed his readers outright worthless fantasy. It wasn't until the 1920s that Hugo Gernsback, the founder of *Amazing Stories* magazine, coined the term "scientifiction," which soon morphed into "science fiction," and later, "sci-fi."

Some Testimonials

Some of the better-known rocket men and space scientists who have expressed their debt to Jules Verne are Konstantin Tsiolkovsky, Robert Goddard, Hermann Oberth, Edwin Hubble, Willy Ley, Valentin Glushko, Wernher von Braun, Frank Borman II, and Georgi Grechko. Not all Verne readers became rocket scientists, of course. Many scientists and explorers in many other fields were also inspired by him, and have said so.

Soaring above the story lines of the two books reviewed here, is Jules Verne's love of humanity. His personal mission was to light a fire in the hearts and minds of his readers with the idea that the challenges and difficulties faced by each of us and by mankind can be faced and overcome: that our military-industrial complexes at home and in all countries, of which President Dwight Eisenhower warned in his farewell address to the nation on January 17, 1961, and as denounced by President Donald Trump on October 9, 2019, can be repurposed to peaceful pursuits (just as Verne does with the Baltimore Gun Club and Capt. Nicholl); with a dedication to joint science-driven missions to our mutual benefit.

Author's Note: I recommend only the two translations reviewed here. I invite readers of this review who wish to know more about Jules Verne, his life and works, to contact me at charlesnotley@gmail.com.