Galileo's Daughter: A Historical Memoir of Science, Faith, and Love Study Guide

Galileo's Daughter: A Historical Memoir of Science, Faith, and Love by Dava Sobel

BOOKRAGS

Contents

Plot Summary

GALILEO'S DAUGHTER by Dava Sobel begins with a letter written on May 10, 1623 from Suor Maria Celeste to her father, Galileo. Sobel reveals that this first letter is one of the 124 letters that survived both father and daughter. It is a mystery as to what happened to Galileo's letters to Maria Celeste. For many years, experts and theorists assumed that Galileo's letters were being kept locked in the Vatican library, a vast collection that is only accessible to members of the Vatican and, with permission, certain academics. This is untrue.

Virginia Galilei was the eldest daughter of Galileo and Marina Gamba of Venice, born on August 13, 1600. Because Virginia was illegitimate, she was considered to be "unmarriageable." Shortly after Virginia's 13th birthday, Galileo put the girl in the Convent of San Matteo in Arcetri, where Virginia, know known as Suor Maria Celeste, would spend the rest of her life in seclusion in poverty.

Sobel briefly recounts Galileo's tenure at both the Universities of Pisa and Padua. In 1609, Galileo performed one of his first experiments with a telescope in his garden at Padua. Galileo's studies, which consisted of confirming the theories of Nicolaus Copernicus, opened new found worlds and were eventually responsible for his obtaining an appointment as the chief mathematician and philosopher to the Grand Duke of Tuscany in 1610. However, the study of the heavens was not without trouble. In 1616 the Pope and a Cardinal Inquisitor admonished Galileo and warned him to curtail his efforts regarding heavenly bodies as the discourses bordered on heresy.

One of Galileo's first famed experiments took place atop the Leaning Tower of Pisa. The experiment was intended to disprove Aristotle's theory that two items dropped from a great height would hit the ground at different times if they were different weights. Galileo intended to prove that the theory was untrue.

Galileo's first significant invention was the geometric and military compass. Shortly thereafter, Galileo procured a position as a math tutor for Cosimo Medici, son of the Grand Duke Ferdinando I. Cosimo and Galileo would develop a strong friendship that would last throughout their lifetimes.

Although Galileo was a mentor in the Medici court, he continued to teach at Padua and also continued his experiments. It was at that time that Galileo created the first telescope. Eventually, Galileo would share his invention with many people across Italy so that they, too, would experience the same wonder in the heavens. Galileo also traveled to Rome, where he shared his discoveries with various academics and members of royalty. Galileo was especially honored when he was invited to join the Lyncean Academy, a prestigious academic group of philosophers and the world's first scientific society.

Galileo began to prove various theories, much to the dismay of their supporters. As a result, Galileo gained fame and prestige as well as derision.

The battle began between scientists and religious figures. Galileo continued to study and refine scientific theories, first postulated by Copernicus. It was feared by many that the holy fathers would ban Copernicus, and therefore the development of Galileo's telescope and other works would be in danger. In 1633, Galileo was tried at the Holy Office of Inquisition, a separate entity from the Catholic Church.

Galileo was forced to rework the controversial book, DIALOGUE OF THE TIDES and to never teach again. The following year, Maria Celeste died at the Convent of San Matteo. Galileo followed eight years later.

Part One, To Florence

Part One, To Florence Summary and Analysis

GALILEO'S DAUGHTER by Dava Sobel begins with a letter written on May 10, 1623 from Suor Maria Celeste to her father on the occasion of the death of Virginia Galilei, Galileo's sister, and the woman after whom Maria Celeste was originally named before taking her vows at the Convent of San Matteo.

Sobel reveals that this first letter is one of 124 letters surviving from Maria Celeste to Galileo. Of the three Galilei children only Maria Celeste had her father's intelligence, sensibility, and industry. Because of these qualities, Maria Celeste was not only as Galileo's daughter but also his confidant.

Maria Celeste was the eldest daughter of Galileo and Marina Gamba of Venice. Virginia Galilei was born on August 13, 1600, the same year the Dominican friar Giordano Bruno "was burned at the stake in Rome for insisting, among his many heresies and blasphemies, that the Earth traveled around the Sun, instead of remaining motionless at the center of the universe." It is ironic that Virginia's father would follow in Bruno's footsteps.

Because Virginia was the illegitimate daughter of Galileo and Marina Gamba, the girl was considered to be "unmarriageable." As a result, shortly after Virginia's 13th birthday, Galileo put the girl in the Convent of San Matteo in Arcetri, with the intention that Virginia would receive a solid education until a husband could be found for her. At the age of 16 Virginia elected to take her vows and adopted the name Maria Celeste in honor of her father's fascination with the stars. Suor Maria Celeste spent the rest of her life in seclusion in poverty. Galileo's second daughter, Livia, also entered the Convent of San Matteo. Livia also chose to take her vows, adopting the name Suor Arcangela.

Unlike Maria Celeste, Arcangela usually remained silent and was thought to be "strange." As a result, Maria Celeste often spoke for her younger sister. The youngest child of the Galilei family, Vincenzio, was destined to study law at the University of Pisa, his father's alma mater. Unlike Maria Celeste and Arcangela, Vincenzio was legitimized by the Grand Duke of Tuscany so he was able to resume his studies and launch a professional career.

In the first letter Maria Celeste attempted to console her father now that he was left alone in the world. His two daughters were cloistered in the convent; his son, Vincenzio was still an adolescent and attended University, and Marina had died. Galileo was 59 years old.

Sobel briefly recounts Galileo's tenure at both the Universities of Pisa and Padua. In 1609, when Maria Celeste was a child, Galileo did one of his first experiments with a telescope in his garden at Padua.

Galileo's experiments with the telescope led to intense study of the Milky Way and familiar constellations. Galileo's studies opened new found worlds and were eventually responsible for his obtaining an appointment as the chief mathematician and philosopher to the Grand Duke of Tuscany in 1610. Galileo moved to Florence with Virginia and Livia that year to assume his role at the court of Cosimo de' Medici. Because Vincenzio was only four years old, Galileo decided to leave the boy in Padua with Marina.

Galileo's studies consisted of confirming the theories of Nicolaus Copernicus, which had been introduced 50 years before, but were often discounted due to a lack of evidence. Galileo was determined to prove Copernicus' theories. However, the study of the heavens was not without trouble. In 1616 the Pope and a Cardinal Inquisitor admonished Galileo and warned him to curtail his efforts regarding heavenly bodies. Some began to comment that Galileo's discoveries were against the principles in the Bible and therefore the scientist was committing heresy. Galileo followed those orders until the death of his sister Virginia in 1623.

Galileo had found an ally in Pope Urban, often referred to as the "Poet Pope." Pope Urban encouraged Galileo to write a dissertation on the rival theories of cosmology: the Earth-centered or the Sun-centered or in the Pope's words, the "two chief systems of the world." Thus began Galileo's foray into publishing his findings regarding the heavens.

Although it is never mentioned in any of Suor Maria Celeste letters, Sobel believes that may have been difficult for Maria Celeste to reconcile Galileo's position as a potential heretic with her role as a nun and the bride of Christ. However, Maria Celeste knew her father well enough to know that he was a devout Catholic and that his studies in science were completely unrelated to his deep sense of religion. In fact, Galileo believed that science and religion could exist together.

It is a mystery as to what happened to Galileo's letters to Maria Celeste. For many years, experts and theorists assumed Galileo's letters were kept locked in the Vatican library, a vast collection that is only accessible to members of the Vatican and, with permission, certain academics. This is untrue and the thorough scouring of Vatican library proves that Galileo's letters no longer exist. However, Galileo's story can be told through the eyes of Maria Celeste. In 1992, Pope John Paul II revisited Galileo's scientific experiments and the resulting inquisition. "A tragic mutual incomprehension," his Holiness observed of the 350 year Galileo affair, "has been interpreted as the reflection of the fundamental opposition between science and faith."

Sobel includes a genealogy of the Galilei family, partly to make clear the repetition of names over several generations. The original family name was actually Buonaiuti, after renowned doctor Galileo Buonaiuti. The family adopted a version of the doctor's first name, and supposedly combined it with Galilee, although the family was not Jewish. Dr. Galileo Buonaiuti's tombstone reads "Galileo Galilei."

Vincenzio Galilei, Galileo's father, was a well-known musician and responsible for teaching Galileo how to sing and how to play several instruments including a family favorite, the lute. Vincenzio wrote a book on the trend of the newly designed lute, titled DIALOGUE OF ANCIENT AND MODERN MUSIC. In 1572 Vincenzio joined with scholars, poets and virtuosos with the aim of reviving classic Greek tragedy combined with music. Their efforts were highly successful and years later proved to be the impetus for opera.

It is obvious Galileo was often stubborn. At first, Galileo entered the University of Pisa, where he was to study medicine and mathematics, both of which were considered arts. After discovering Euclidean geometry Galileo turned to mathematics, much to Vincenzio's dismay. After procuring a place on the faculty at the University of Pisa in 1589, Galileo was often redressed for his refusal to wear the official uniform of faculty. Galileo referred to the doctoral dress as "a pretentious nuisance" and eventually wrote a 300 line, poetic spoof of the togas that were required to be worn at all times. Galileo argued that the toga "hid the true merits of character under a cloak on social standing." In other words, it hid the physique and also prevented faculty members from going to brothels. It also restricted Galileo's treks to the top of the Leaning Tower of Pisa, where he conducted one of his most famous experiments.

The experiment performed at the top of the Leaning Tower was intended to disprove Aristotle's theory that two items dropped from a great height would hit the ground at different times if they were different weights. Galileo intended to prove that the theory was untrue. The original experiment partially proved Aristotle's theory, although the results were not nearly as drastic as the philosopher had claimed. The second experiment showed that the 100 pound ball did fall faster than the 1 pound ball, but landed faster by a mere 2 inches.

After Vincenzio died, Galileo took on the responsibility of the family finances. The finances included paying for his sisters' dowries as well as other expenses. Although the responsibility was somewhat of a financial burden given Galileo's modest salary, the mathematician took on the burden with pleasure. There was a small amount of help from Galileo's younger brother, Michelangelo, until Michelangelo married and reneged on his end of the agreement.

Galileo's first significant invention was the geometric and military compass. The compass was designed to operate as a primitive pocket calculator but was also used as a way to calculate square roots for military battalion placement as well as to convert foreign currency exchange rates. Shipwrights also used the device to create scale models of ships.

Galileo procured a position as a math tutor for Cosimo Medici, son of the Grand Duke Ferdinando I. Cosimo and Galileo would develop a strong friendship that would last throughout their lifetimes, and the relationship eventually benefited Galileo when Cosimo assumed the position of Grand Duke of Tuscany at age 19.

As Ferdinando was dying, his wife, Archduchess Cristina asked Galileo to create the Duke's horoscope. Galileo was often expected to create horoscopes, which were rarely accurate. In the case of Ferdinando, Galileo could not have been more incorrect.

Although Galileo was a mentor in the Medici court, he continued to teach at Padua and also continued his experiments. It was at that time that Galileo created the first telescope. Eventually, Galileo would share his invention with many people across Italy so that they, too, would experience the same wonder in the heavens. Galileo also traveled to Rome where he shared his discoveries with various academics and various members of royalty. Galileo was especially honored when he was invited to join the Lyncean Academy, a prestigious academic group of philosophers and the world's first scientific society.

Galileo began to prove various theories, much to the dismay of the Academy's supporters. As a result, Galileo gained fame and prestige as well as derision. During an early stay in Venice, Galileo and two friends proceeded to take a nap in a cave, which was cooled by air from an underground waterfall. This was a common method of creating air conditioning. Noxious vapors entered the cave and two of the friends died. From that time on Galileo suffered from ill health, sometimes to the point of disability.

The battle began between scientists, religious figures and Galileo's detractors. Galileo was known as a devout Catholic and as such had many supporters in the Catholic Church, including Pope Urban, Carlo Cardinal Conti, and the Benedictine monk Benedetto Castelli.

Galileo continued to study and refine scientific theories created by Copernicus. It was feared by many of the holy fathers would ban Copernicus, and therefore the development of Galileo's telescope would be in danger. Galileo intended to prove one of his scientific theories by writing TREATISE ON THE TIDES.

Once again Galileo's detractors banded against him, and eventually, a panel of 11 theologians from the Church decided that the theories developed by Copernicus and later Galileo were heretical. Galileo was the summoned by members of the Inquisition and was told that he was required to cease all experiments regarding the heavens at once or he would be tried as a heretic by the Holy Office.

Although Galileo publicly stopped his experiments, he became clever about how to continue his studies after a short reprieve. Galileo continued to dedicate many of his works to influential royals and religious figures in hopes of winning favor.

Part Two, On Bellosguardo

Part Two, On Bellosguardo Summary and Analysis

Part two begins with "How Our Father Is Favored." The chapter starts out with a letter from Maria Celeste to Galileo. Galileo had shared a letter he received from the Cardinal turned Pope. Maria Celeste was pleased that the Supreme Pontiff was obviously so fond of her father. Maria Celeste had asked to see the letter Galileo wrote in return and at that time was unaware that writing such a letter would be inappropriate. Instead, Galileo sent congratulations through the Pope's nephew, Francesco, who was also a former student.

In August 1623, Maffeo Cardinal Barberini accepted the appointment as Pontiff. The Cardinal took the name Urban VIII. Galileo was immediately aware that his relationship with the recently appointed Pope would certainly benefit him in many ways. Galileo eventually wrote a letter to the Pontiff in a most deferential tone. As a gift Galileo sent a copy of his books as well as TREATISE ON THE TIDES, which had yet to be published. Also included with the gifts was Guiducci's DISCOURSE ON THE COMETS.

Galileo wanted nothing more than to make the trip to Rome in August so he might kiss the feet of the new Pope and join the Lyncean Academicians in a march to celebrate Urban's investiture. It turned out that Urban fell ill and did not officially assume his duties until September. Although Urban had fallen ill with the epidemic that plagued Rome, the new Pope was youthful compared to previous Popes Paul and Gregory, who were sickly and much older than Urban's 55 years.

Sobel shows Galileo's devotion to the church and also his plans to further his career through the ongoing relationship with Urban VIII. Urban VIII received almost immediate criticism when he began to appoint family members to key positions in the Vatican.

Sobel recounts some of the issues faced by Urban, including the Protestant Reformation, which threaten to erode the Roman Catholic Church. In response, Urban strengthened his version of Catholic Reform.

Urban continued to be impressed with Galileo's work, the most recent of which was THE ASSAYER. In the book Galileo wrote, "I believe that good philosophers fly alone, like eagles, and not in flocks like starlings. It is true that because eagles are rare birds, they are little seen and less heard, while birds that fly like starlings fill the sky with shrieks and cries, and wherever they settle befoul the earth beneath them."

The Pope's favorite passage in THE ASSAYER was a parable about the song of the cicada. The Pope saw the story as it was meant, illustrating "the boundless creativity of God in the bounty of Nature."

In the summer of 1623 Galileo fell ill once more. This illness was the first to be recorded by Maria Celeste, in which she mourned the inability not to tend to her father as she

was cloistered in the convent. Sobel also gives insight into some of the events and other nuns in the order, as well as the Rule of Saint Clare. Because the order was quite poor, Maria Celeste often found it necessary to approach Galileo for money, a task which the nun found embarrassing and uncomfortable.

The next letter to Galileo from Maria Celeste was dated November 21, 1623. In this letter, Maria Celeste worries about her father's health and also discusses her own ill health due to the cold. Similar conditions plagued Arcangela. Maria Celeste also related that the convent was so cold that the nuns remained dressed while they slept and in case Death should call one of them in the middle of the night, the sister would be fully prepared to enter her next life.

After much discussion Galileo convinced Maria Celeste to petition Pope Gregory for help regarding the indigent convent. It was not uncommon for the sisters to go hungry. Although the Rule of St. Clare was devoted to poverty, the 16th century allowed the convents throughout Italy to own property which may be rented or sold with the proceeds to be used to support the convent. As always, Maria Celeste was infinitely grateful to Galileo for his intervention.

Due to illness and bad weather, Galileo postponed his trip to the Vatican until April 1, 1624. The journey to the Vatican was long and en route Galileo stopped to visit his patron and friend Prince Cesi who lived in Acquasparta.

The next letter from Maria Celeste discussed Galileo's trip to Rome and the side trip to see Prince Cesi. This letter, dated April 26, 1624, was the only letter Galileo managed to save that year. It was more than one year before the next letter appears in Galileo or Maria Celeste's possessions. There was no explanation.

Galileo spent five weeks in Rome, often taking long walks and indulging in lengthy conversations with Pope Urban. There was controversy at this time as the Edict of 1616 began to frighten astronomers throughout Europe, who were afraid that their studies, parallel to Galileo's, would brand them as heretics. Urban never supported the edict and worked diligently to keep the word "heresy" out of the final draft of the edict. Instead, the edict stated that the theory of a heliocentric universe was "false" and "contrary to Holy Scripture." Although Urban and several of the other cardinals did not believe in a heliocentric universe, they all admired to Galileo's efforts and the merit involved with seeing more than one side of cosmology.

While in Rome Galileo managed to secure a pension for Vincenzio, a promise to help the Convent of San Matteo, and was also awarded with a glowing letter from Urban lauding the efforts of Galileo that was to be sent to the young Duke Ferdinando.

Once again, Galileo felt confident in resuming his public opinions regarding Copernicus' theories but decided to test the waters before he wrote his next book. The trial run was written as a response to an anti-Copernican treatise written by Monsignor Francesco Ingoli, Secretary of the Congregation of the Propagation of the Faith. The two men met in a debate, which was eventually interrupted by the rules laid out in the Edict of 1616.

The men would talk again eight years later. Galileo was hesitant to go up against the Monsignor, even though the astronomer's main complaint was that the Monsignor's disagreement with the Copernican theories was based more on religion than astronomy. In the conversation that took place eight years later, Galileo attempted to convince the Monsignor that believing in Copernicus' theories did not mean that one was a heretic. In fact, devout Catholics retain the old truth, not because they lacked scientific understanding or anything involved, but because they have a reverence toward their religion and faith. There are several letters included from the Galileo to the Monsignor.

Galileo's next project, DIALOGUE ON THE TIDES was dedicated to the grand Duke of Tuscany, as was Galileo's habit with an aim at receiving favor from powerful people. The work contained Galileo's life experience, scientific work, and devotion to the Catholic faith. The DIALOGUE ON THE TIDES took almost six years to write and was finally published in 1630. Galileo was very clever in writing this new book. Instead of stating his beliefs and experiences regarding the theories of Copernicus and also disproving the experiments of Ptolemy, Galileo wrote the book as a thinly-veiled fictional work in which several friends discussed the issues. While it was obvious that the book was autobiographical, the act of creating a fictional work was very beneficial to Galileo.

Sobel discusses Galileo's intermittent work on DIALOGUE ON THE TIDES as well as the ongoing accusations of heresy.

The next letter from Maria Celeste was dated December 19, 1625 in which she spoke of the Christmas gift she'd made for her father. Sobel also discusses some of the activities at the convent including the work that took place in the apothecary, much of which was performed by Maria Celeste. It was this position that allowed the nun to make a herbal remedies for her father. Much of the landscape at the convent was dedicated to medicinal plants and herbs.

In 1626, when Galileo finally returned to work on DIALOGUE ON THE TIDES, he demonstrated how movement of the earth would create motion with earthly objects. Galileo compared this movement to the feeling of passengers aboard a ship.

In 1626, the pension that had been promised to Vincenzio was finally approved. Galileo became angry when Vincenzio refused the pension, claiming that he had "a bitter hatred of the clerical state." The decision by the 21 year-old Vincenzio drove a wedge between father and son and Galileo was left to find another recipient for the pension.

In the spring of 1627, Galileo's brother Michelangelo, a musician, asked Galileo to take care of his wife, Anna Chiara, along with some of their children until the family would be assured safety from what eventually became the Thirty Years War. Michelangelo had promised Galileo that he would have no more than two extra mouths to feed. It should not have surprised Galileo when Michelangelo's wife Anna Chiara arrived at Galileo's house with all eight children and a German nurse, totaling an additional 10 mouths to feed. The children ranged from 20 years old to infancy, and suddenly Galileo's house became noisy and chaotic. In the spring of 1628, Galileo fell ill and took refuge in

Florence at the home of some acquaintances. In May 1628, one year after Anna and the children had arrived in at the Galileo's home, the family returned to Germany.

In the spring of 1628, Vincenzio returned home and was obviously a more mature man after having received his doctoral degree after studying law for six years at the University of Pisa. Vincenzio began to visit with Maria Celeste and Arcangela on a regular basis. In December 1628 Vincenzio announced his impending marriage. The news called for another letter from Maria Celeste, expressing her happiness at Vincenzio's upcoming nuptials.

Sobel discusses the bride to be, her family and the plans for the wedding.

The next letter from Maria Celeste was dated July 8, 1629. In this letter, Maria Celeste asked Galileo for money so she might get her own cell at the convent. Maria Celeste had previously been in possession of a small cell, but she gave it to Arcangela, who was being constantly tormented by a novice mistress. Because of Arcangela's disposition, Maria Celeste worried that overexposure to the mistress might cause great harm to her younger sister. It was later learned that the novice mistress, who was never referred to by name, was appointed by the mother abbess. The mother abbess did not know that the novice mistress abused the Rule of Saint Clare due to serious emotional problems.

The author recounts Galileo's ongoing studies and devotion to the theories of Copernicus. These included sunspots, summer and winter solstices, the sheer and enormity of the solar system, and theories and evidence regarding stars and planets.

After the marriage of Vincenzio and Sestilia, it was no longer necessary for Galileo to care for his son. In addition to taking care of Vincenzio, Sestilia was also happy to take care of many of Galileo's needs. While this relieved Maria Celeste of much worry, it certainly created some sadness. Galileo's daughter quickly sought to find other ways that she could help her father, such as copying the draft manuscript of the newly completed DIALOGUE ON THE TIDES. In Maria Celeste's next letter, she detailed the heartbreak of not being able to purchase the cell for which Galileo had sent money. Because Maria Celeste had been of great assistance to the mother abbess, she was promised the opportunity to receive a much grander cell, if only Galileo could pay for the room. Naturally, Galileo paid so that Maria Celeste would have her own cell.

In December, Vincenzio and Sestilia had a son and named him Galileo Galilei, the final member of the family to carry the name.

Part Three, in Rome

Part Three, in Rome Summary and Analysis

At the end of 1629, Galileo had finished writing DIALOGUE ON THE TIDES, which was sent to Maria Celeste for copying, a duty that the faithful daughter took on with great pride. Galileo and Maria Celeste developed an even closer relationship. Galileo, who had often been a source of financial aid and love to his eldest daughter, now began to work on several items at the convent, which would require the use of his hands. At first, Maria Celeste felt trepidation about asking Galileo for this help as "the work is rather more suited to a carpenter than a philosopher." Regardless, Galileo took on the several projects including repairing the window in Maria Celeste's cell and repairing the convent clock which had been purchased by Galileo's brother, Michelangelo. Both Maria Celeste and Vincenzio had attempted to fix the clock to no avail. Galileo succeeded. In 1641, Galileo and Vincenzio put their heads together to develop a prototype of a pendulum clock. Vincenzio drew the blueprint and built a model but neither finished the work. In 1656, Christian Huygens patented a pendulum clock but was accused of being a plagiarist, even though it was untrue.

Maria Celeste became exceedingly worried about Galileo's health, particularly when he planned to go to Rome to procure a printing license for the newly completed DIALOGUE. On May 3, Galileo arrived in Rome at the Tuscan embassy, where he would live for the next two months as the house guest of Ambassador Francesco Nicolini and his wife, Caterina. Galileo also benefited from Caterina's connections to the Vatican, particularly that of her cousin, Dominican father Niccolò Riccardi, who was in control of the licensing of books. As Pontiff, Urban held power over all, but Riccardi was chosen to take on many duties as the cardinal vicar. Because of Riccardi's imposing physical presence and mental prowess, the cardinal was often affectionately referred to as "Father Monster." As an admirer of Galileo's work, Father Riccardi was keen to assist Galileo. The connection to Caterina Nicolini also became important as she became friendly with Maria Celeste. Galileo arranged this relationship with the hopes that Caterina might become a patroness of the Convent to San Matteo.

Unfortunately, during Galileo's two months in Rome, he only had one opportunity to meet with Urban as the Pope was extremely busy tending to extremely difficult papal affairs, including machinations related to the Thirty Years' War.

Sobel goes on to discuss finer points of the war, including the involvement of the Hapsburg troops from Austria.

Galileo suffered a blow at the death of Prince Cesi followed shortly by the death of a glass blower in his employ. Both had died from the bubonic plague.

The next letter from Maria Celeste regards the deaths of Galileo's friend and worker. The letter also includes news that Maria Celeste was now in charge of teaching a

Gregorian chant to some of the young girls and also took on the responsibility of directing the choir. Maria Celeste found this challenging as her Latin was not strong. Regardless, she enjoyed the task.

It is humorous that in many of Maria Celeste's letters, she asks for the return of items such as fabrics or baskets sent to Galileo containing gifts.

Rome continued to be bombarded with the bubonic plague and most that were diagnosed had little to no hope of recovery. Although the worst of the bubonic plague had taken place in the 14th-century, the author states that "the plague returned for one reason or another at its own whim every few years, as though to remind the wayward of the tortures of Hell."

Although many Europeans had begun to recognize the early signs of a plague, many did not connect the signs with the actual disease, such as an abundance of rats. The plague was often blamed on swampy air, the planets, the moon, fate, famine, beggars, Jews, or prostitutes. One of the most common ways in which the plague was transmitted was through the bite of fleas. It seemed that only Venice is spared.

In 1628, Ferdinando II, a 20-year-old member of the Medici family, ascended to the throne as the Grand Duke of Tuscany. In an attempt to stop the spread of the plague Ferdinando ordered victims and their families to be quarantined for 22 days. Houses were sealed, belongings were burned, and the stricken were sent to plague hospitals. As a measure of avoiding the pandemic that killed 6000 Florentines in the fall of 1630, Vincenzio and a pregnant Sestilia fled to the country. Their son, Galileo, not even 1 year old, was left behind in the care of his grandfather and a wet nurse.

Fortunately, the confines of the convent protected all the sisters from the plague. Unfortunately the pandemic also stopped many of the contributions to the convent. Many of the sisters went hungry. The nuns began a letter writing campaign in order to find patrons. The dowager Grand Duchess Cristina was one of the people that eagerly helped the convent by sending food and money. The archbishop of Florence came forth and promised to help the convent, although he required the names and financial status of the nuns' family members so that they may be required to contribute. At this request, Maria Celeste panicked; worried that Galileo would be unduly taxed. To prevent this from occurring Maria Celeste restructured the convent's finances so that the monies held by the families as well as the accrued interest could be requested to meet the convent's immediate needs. Maria Celeste could not make this suggestion to the archbishop and requested that Galileo do so in her place.

In December 1630 a cold wind attacked Tuscany forcing the Galileo to stay indoors. In January, the magistracy ordered a quarantine to last 40 days, so that the waning plague might be stopped once and for all. Regulations for travel in and out of the city were very strict and people were only allowed to leave their homes to go to church or to buy medicine or food. Galileo was unable to visit Maria Celeste in the convent, which made him quite sad. Vincenzio and Sestilia, still in exile, celebrated the birth of their son Carlo in January. News of the birth did not arrive quickly to Galileo's house, nor did any

communication from Vincenzio or Sestilia. During this time Galileo also took custody of his niece, Virginia, whose parents were ill. Maria Celeste expressed great sorrow at not being able to see her nephew, Galileo, or grandniece, Virginia. Maria Celeste also lamented not being able to take on the care of Virginia, with the hopes of relieving Galileo of some of the responsibility. Instead, Maria Celeste continued to do whatever she could to help Galileo, including repairing his wardrobe as best she could.

In 1631, Galileo, Vincenzio, Sestilia and the children moved into a villa literally around the corner from the Convent of San Matteo. Galileo lived in this house in Arcetri from 1631 up to his death in 1642. The proximity of the new house meant that Galileo and the rest of the family would be able to visit Maria Celeste and Arcangela much more often than they had in the past. In fact, Galileo was able to see the convent from his office window.

The plague had suspended the publishing of DIALOGUE once again. After the death of Prince Cesi, Galileo proceeded with the publishing after gaining the approval of several Florentine officials. Galileo was informed however that Father Riccardi still held the destiny of the manuscript, and that he chose to read it once more before approving the document. This posed a problem as many letters and documents were being checked and confiscated at various checkpoints to prevent further contamination by the plague. If letters were confiscated, the manuscript for DIALOGUE would surely be taken. Galileo proposed that he send pieces of the manuscript in the hopes that they would reach Father Riccardi. The balance of the manuscript would be reviewed by an authority in Florence who would be chosen by Father Riccardi. After many months the book was finally approved by Father Riccardi, with the stipulation that a preface be added and the preface was supplied by "Father Monster." Riccardi also made notes as to how the book should end.

The new preface read:

"Dialogue Of Galileo Galilei, Lyncean, Special Mathematician of the University of Pisa and Philosopher and Chief Mathematician of the Most Serene Grand Duke of Tuscany. Where, in the meetings of four days, there is discussion concerning the 'Two Chief Systems of the World,' Ptolemaic and Copernican, propounding inconclusively the philosophical and physical reasons as much for one side as for the other."

In the end, DIALOGUE contained 500 pages, and the printing of 1000 copies was a slow and laborious process that took nine months to complete.

There are no letters from Maria Celeste to Galileo at this time due to the fact that Galileo now lived next door to the convent and frequently visited his daughter.

Copies of DIALOGUE met with acclaim throughout Italy and quickly sold out in the stores. Galileo also sent copies to various friends throughout the country. Galileo longed to send copies to Rome, although to do so would cause them to be confiscated as the return of the plague threatened to contaminate any document. Galileo eventually sent copies to Rome with a friend who had hidden the books in his luggage.

When the books arrived in Rome, Galileo received mixed reviews. Several cardinals and clerics raved about the book, although they could not say so publicly. Urban had not had time to read the book for himself due to strenuous papal obligations. Instead, lesser authorities read the book and convinced Urban that Galileo had played him for a fool, and that the book was filled with egregious insults toward the Pope and the church as a whole. Urban became very angry and required Galileo go to Rome immediately. Galileo wrote back to Urban asking if he could be given a reprieve from the trip considering ill health and advanced age. Urban declined and required Galileo's presence. On the way to Rome, Galileo suffered yet another setback, and was quarantined from 20 to 40 days. At one point Galileo became so ill that he could not be moved. Word traveled to Rome that the illness was nothing more than hypochondria. Pope Urban required Galileo's presence immediately. The Pope's nephew and Galileo's friend, Cardinal Francesco Barberini, could not change the Pope's mind. In order to ease Galileo's hardships, Francesco sent a litter to Siena, which was to be ridden by Galileo to the Vatican.

Part Four, In Care of the Tuscan Embassy, Villa Medici, Rome

Part Four, In Care of the Tuscan Embassy, Villa Medici, Rome Summary and Analysis

This trip to Rome proved to be the time in which Galileo would be tried for his crimes against the church. Galileo had several powerful men on his side, including Francesco Niccolini and Francesco Cardinal Barberini, Pope Urban's nephew. As Galileo's health was still poor, he often remained indoors at the home of Francesco and Caterina Niccolini, who were pleased to receive Galileo at the Tuscan Embassy once again. It was also implied that Galileo should stay indoors as much as possible for his own safety.

Galileo had no idea how long he would be required to stay in Rome and desperately missed his house in Arcetri. To ensure everything would run smoothly while he was away, Galileo gave executive power to Maria Celeste over all personal affairs.

The next letter from Maria Celeste to Galilieo detailed the things that were happening in Arcetri, including those at the convent and Galileo's house. Maria Celeste continued to write a long letter every Sunday, detailing the week's events. Some harbinger of hope arrived when Ambassadress Caterina Niccolini agreed to visit the Convent of San Matteo. All the while Francesco Niccolini continued to plead Galileo's case to Pope Urban with the hope that Galileo's ill health and their former relationship would convince the Pope to expedite the upcoming trial and to let Galileo go home.

In mid-March Ambassador Niccolini wrote: "I reiterated that his old age, ill health, and readiness to submit to any censure might render him worthy of such favor," Niccolini wrote of this attempt, "but his Holiness again said he thinks there is no way out, and may God forgive Signor Galilei for having meddled with these subjects."

Galileo was at the Tuscan Embassy for two months before he was taken to the Holy Office of the Inquisition to be questioned. Only one secretary and two officials attended this meeting. The ten cardinals, of which Barberini was one, who would act as Galileo's judges did not attend but rather would read the meeting's brief at their leisure.

Maria Celeste had learned about the Inquisition from Sestilia's brother, who worked as the Grand Duke's private secretary. Maria Celeste tried to convince her father not to worry too much because it wasn't good for his failing health. Maria Celeste continued to hope the trial would end with the Pope and influential members of Rome realizing her father's brilliance.

The author includes the only written transcript of the meeting at the Holy Office of the Inquisition.

It may be this transcript that confused many historians in thinking that Galileo had been tried in 1616. This is not true. Galileo was in fact questions during that time but was never tried nor convicted.

After the long laborious trial, Galileo was permitted to leave his prison and return to Arcetri with the promise that he would modify DIALOGUE in order to remove blatant signs of heresy. Galileo maintained hope that DIALOGUE would not be banned but in fact its printing was "postponed" and was not published, even illegally, until several years later. In 1757, the ban against Dialogue was withdrawn.

Part Five, At Siena

Part Five, At Siena Summary and Analysis

Many viewed Galileo's trial as a case of science versus religion. Anti-Catholics claimed that the church opposed Galileo's theories "on biblical grounds, and that the outcome mocked the infallibility of the Pope."

Galileo's conviction was issued and supported by the Holy Office of the Inquisition, not the Roman Catholic church and Pope Urban. Even though Pope Paul approved the Edict of 1616 and Pope Urban agreed with Galileo's conviction, neither Pope invoked papal infallibility.

Galileo still maintained personal and professional support from several high-ranking members of the church including the friendship of the Archbishop of Siena. After leaving Rome, Galileo went to Siena to stay in the "custody" of Archbishop Piccolomini. It seems however that the act of custody was more of a friendly visit and Galileo's health improves.

Galileo received a letter from Maria Celeste expressing both worry and jubilation over the outcome of the trial. Maria Celeste told her father that all the sisters were praying for him and when the Mother Abbess learned of Galileo's impending return, she ran to Maria Celeste with open arms, crying, to express her love for Galileo and the possibility of his safe return.

The letter from Galileo to Maria Celeste has been lost, but a follow-up letter from Maria Celeste was included. Maria Celeste began to worry about what might happen to Galileo's possessions during his prolonged absence.

Galileo was not idle during his time in Siena and was responsible for solving the problem of the casting of the town's new bell, which had previously been destroyed due to its great weight.

Although Maria Celeste was anxious for Galileo to return to Arcetri she advised her father to stay in Siena awhile longer that he might regain health and serenity.

The summer of 1633 was hot and oppressive in Arcetri. Maria Celeste complained about the toll the heat took on her. Maria Celeste said little about her care of the ailing sisters in the convent's infirmary or the fact that she was being considered to be the next Mother Abbess. Maria Celeste had been considered for the position in the previous December but was too distracted and concerned about Galileo's trial.

While in Siena, Galileo began to work on a book that had been floating around in his mind for 25 years. The book was to be written on the topic of motion. Unlike his earlier works Galileo decided to ignore the theories of Aristotle, which he had proven to be

incorrect and rather decided to focus on how things moved by showing "painstaking observations and measurements."

Maria Celeste continued to write letters to Galileo, expressing her anxiety for his return. She also enclosed prayers that might be used for penance.

In the autumn of 1633 Galileo became despondent, claiming that he felt like an outcast in the world. As usual, Maria Celeste wrote back with love and support to her father, reminding him that he was well loved by the Archbishop as well as many people who saw the importance of the work.

Part Six, From Arcetri

Part Six, From Arcetri Summary and Analysis

The weather during the autumn of 1633 took a great toll on Galileo, Maria Celeste, and the sisters at the convent. Great rains were present through October and November. Maria Celeste suffered from malaise and Galileo experienced significant increase in his arthritic condition.

Galileo continued to work on his project and disappointed Maria Celeste by not informing her of the most recent news from Rome.

The author discusses observations and calculations made by Galileo for inclusion in his new book.

Maria Celeste began to doubt that she would live to see her father's return. After a long period of time, Pope Urban permitted Galileo to be sent to Arcetri. The recommendation from the Pope to the Holy Office was not to send Galileo home for comfort but rather to take him away from the positive conditions of Siena. It was stipulated that Galileo would restrict all future social contact and never teach again.

Galileo arrived home in Arcetri in December. The Niccolinis could not make the trip with Galileo as planned. Galileo was not as pleased, as he might have considered himself to be under house arrest.

In March 1634, Maria Celeste became gravely ill, suffering from dysentery contracted from the convent's water or food supply. Galileo visited Maria Celeste every day. The dysentery would not allow Maria Celeste to eat or drink, and she became dehydrated. Despite the best efforts of Galileo, the doctor and sisters, Maria Celeste, died on April 2.

As one might expect, Maria Celeste's death took a terrible toll on Galileo, who held his eldest daughter in highest esteem and confidence.

For the next 8 years, Galileo considered many topics on which to work, mostly mathematical, while the Inquisition plagued him. In 1642, Galileo succumbed to a fever and kidney problems and died.

Characters

Galileo Galilei

Galileo Galilei (1564-1642) was an Italian mathematician, philosopher, and physicist responsible for the refined development of the telescope and proving many of the theories formed by Nicolaus Copernicus. Galileo also disproved many theories developed by Aristotle, whose work was considered to be unimpeachable.

Galileo was the oldest son of Vincenzio and Guilia Galilei, born in Pisa in 1564. Galileo would be the eldest of six children, only four of which survive into adulthood. Vincenzio was a noted musician and was responsible for teaching Galileo to sing and play various instruments, including the lute. Although Vincenzio wanted his eldest son to become a doctor so he could earn a good living, Galileo switched to mathematics, much to his father's distaste. Galileo attended the University of Pisa but did not complete the required coursework. Eventually, Galileo would come to teach at the university, as well as at the University at Padua for about two decades.

Galileo and his mistress, Marina Gamba, had three children out of wedlock. It was not unusual in those days for scholars to remain single. Because of their illegitimate status, the two oldest daughters, Virginia and Livia were sent to live at the Convent of San Matteo. Virginia would eventually accept the name Suor Maria Celeste.

Throughout his career, Galileo made many major contributions to the scientific world, despite ill health and ongoing controversy from many members in the Catholic Church. Although Galileo supposedly turned his focus to studying the tides while he resided at the court of the Medici family, Galileo never stopped trying to prove his theories.

Galileo died in 1642, 8 years after his daughter and frequent correspondent, Maria Celeste.

Suor Maria Celeste Galilei

Suor Maria Celeste Galilei, christened Virginia Galilei, was firstborn daughter of Galileo Galilei and Marina Gamba of Venice. Virginia was named after Galileo's sister, of whom he was quite fond. The young Virginia was sent to the Convent of San Matteo at the age of 13 to receive a solid education under the tutelage of the nuns. Galileo never intended for Virginia to take her vows and live at the convent permanently, although when the time came for the girl to take her vows a husband had not yet been found, and so, Virginia took her vows, devoting her life to God and service.

Eventually, the new novitiate adopted the name Suor Maria Celeste at the convent. Galileo's other daughter Livia also took vows at the convent and adopted the name Suor Archangela. Maria Celeste was, in essence, the guardian of her younger sister, a girl who was prone to melancholy.

Maria Celeste did not know that when she left Florence for the convent, she would never see her brother Vincenzio again.

Throughout her servitude at the convent of San Matteo, Maria Celeste corresponded with her father at great length, often discussing his scientific views on the heavens. Maria Celeste was a great supporter of Galileo's, constantly worried about his ill health, and often acted as pharmacist creating different herbal tonics to assist her father in regaining wellness.

Maria Celeste died in 1634, 8 years before Galileo.

Livia Galilei

Livia Galilei was Galileo's sister, after whom his second daughter was named.

Giordano Bruno

Giordano Bruno - A Dominican friar accused of heresy and burned at the stake in Rome in 1600. Bruno had attempted to prove that the Earth traveled around the Sun.

Nicolaus Copernicus

Nicolaus Copernicus was a mathematician, astronomer and philosopher who lived in the 16th century. Copernicus was the first to theorize that the earth revolved around the sun.

Virginia Galilei

Virginia Galilei was Galileo's sister, for whom his firstborn daughter was named.

Michelangelo Galilei

Michelangelo Galilei was Galileo's brother, responsible for placing family burdens upon Galileo after his marriage.

Livia Galilei

Galileo's second daughter, to also became a nun at the Convent of San Matteo under the name of Suor Arcangela.

Vincenzio Galilei

Vincenzio Galilei - Galileo's only son, named after Galileo's father.

Marina Gamba

Marina Gamba - Galileo's long time mistress from Venice and mother to Galileo's three children - Virgina, Livia, and Vincenzio.

Roberto Cardinal Bellarmino

Roberto Cardinal Bellarmino was a Jesuit intellectual that had presided over the trial of Giordano Bruno. Also known as "Hammer of the Heretics."

The Medici Family

The Medici family was the most powerful family in Italy during the time of Galileo. The family was run by Grand Duke Ferdinando and his wife, Archduchess Cristina from Austria. Eventually the throne was taken over by Cosimo II, a student of Galileo.

Objects/Places

Inventions

The first major invention and patent for Galileo was the geometric and military compass, a tool designed to operate as a primitive pocket calculator. The device would also determine square roots, assist ship makers in creating models to scale, and determine currency exchange rates. The project began to take so much of Galileo's time that he eventually hired someone to make the compasses which sold consistently.

Probably the most well known invention of Galileo's is the telescope. Although the concept for the "spyglass," as it was commonly known, was developed in Florence, Galileo heard about the new device and decided to make his own version, without ever seeing the other device.

Galileo was highly successful in the first and subsequent refinements of the telescope. As a mathematician and astrologer, Galileo was able to calculate the necessary shape and thickness of the lenses needed to view stars in the heavens. The device brought pure joy to Galileo and surprised even the most skeptical opponents. Galileo also used the invention to impress several notable and powerful figures, such as members of the ruling Medici family. Galileo's works and friendship with the family eventually paid off in the form of a lifetime court appointment as mathematician, astrologer and philosopher.

Pisa

Pisa is located on the River Arno in the eastern part of Italy, nearly half the country away from the Eternal City, which lies to the southwest. Pisa is also located relatively near Padua, one of the two places where Galileo spent the majority of his life.

During Galileo's time, Pisa was part of Tuscany, ruled over by the Grand Duke Ferdinando, who was succeeded by his son and Galileo's student, Cosimo II.

Pisa was and is well known for its connection to the great ships that would dock in its harbors and serve as a source of goods from far and wide.

Galileo was born in Pisa and would remain there for a large portion of his life. The weather in Florence did not agree with Galileo who was often sick to the point of disability. Only Pisa seemed to agree with Galileo, although his health remained poor for most of his life.

Galileo and his son, Vincenzio, both attended the University of Pisa, a well-known and highly-respected institute of learning in the region. Although Galileo did not follow his father's wishes and become a doctor, the would-be mathematician learned a great deal about geometry and physics which would serve him well in the years to come. Galileo

never completed his coursework at the university. Years later, Vincenzio attended the University of Pisa to study law.

Arceti

Arceti - location of the Convent of San Matteo.

Villa Medici

Villa Medici - Home to the powerful Medici family, located in Florence.

Rome

Rome is home to the Eternal City known today as the Vatican, and a frequent visiting place for Galileo as he explained his theories to the Cardinals and three different Popes.

Padua

Padua - city in which Galileo lived for many years while teaching at the University of Padua.

University of Pisa

University of Pisa - University at which Galileo served on the faculty in mathematics. Also the university that Vincenzio attended.

Venice

Venice - Home to Marina Gamba, the mother of Galileo's three illegitimate children.

Copernican Argument

Copernican Argument - Copernicus developed the theory that the earth revolved around the sun rather than the sun revolving around the earth.

TREATISE ON THE TIDES

TREATISE ON THE TIDES was a scientific treatise prepared for Cardinal Orsini regarding the origin and patterns of tides.

DIALOGUE ON THE TIDES

TREATISE ON THE TIDES was a book written in the form of dialogue between fictitious friends in which they discussed Galileo's theories.

Themes

Inventions

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Life in the Convent

At age 13, Virginia Galilei entered the Convent of San Matteo in Arcetri. Accompanying Virginia was her younger sister, Livia, who was two years younger. There were two purposes to sending the girls to live at the convent, although they were several years too young to become novitiates. First, it was a common practice to send young girls to a convent to learn discipline, virtue, and receive a good education. The tenure at the convent was typically temporary. Second, Virginia and Livia were born out of wedlock to Galileo and his long-time mistress Marina Gamba of Venice. Galileo remained single, as was common with scholars, and he fathered three children with Marina. Since the children were illegitimate, the daughters were considered to be "unmarriageable."

Husbands were meant to be found for the girls but it did not happen. Eventually, both Virginia and Livia took their vows. Hence, Virginia and Livia joined the membership into the Order of Saint Clare. At their investiture, Virginia adopted the name Maria Celeste; Livia chose to be called Arcangela.

The girls seemed to be relatively happy at the convent despite extreme poverty, excessive number of sisters, and cold. Galileo often helped his daughters with money and gifts. The girls remained cloistered and only communicated with their father through Maria Celeste's voluminous letters and infrequent visit from Galileo and, eventually, Vincenzio.

Maria Celeste seemed to enjoy working with herbs in the apothecary, where she often created remedies for Galileo's often-failing health.

The only real complaints Maria Celeste and Arcangela had were the extreme cold, lack of a private place to sleep for Maria Celeste, and the actions of a novice mistress. The mistress was so cruel that Maria Celeste had given her (temporary) cell to Arcangela to protect the younger and more delicate girl. The mother abbess, who had appointed the novice mistress, was unaware that the woman had serious mental problems.

Maria Celeste and Arcangela lived out their lives in the Convent of San Matteo.

Science vs. Religion

Before the time of Copernicus, scientists and philosophers were often accused of abandoning their respective religions when daring to study anything but the written word of God. This was especially true for Copernicus, who was convinced that the earth was part of a heliocentric universe and that the earth was not stationary as was previously believed. The theory, not completely proven by Copernicus, was considered to be heresy. The year Virginia was born, Dominican friar Giordano Bruno was burned at the stake for those same beliefs. It is ironic that Virginia's father should follow in the same footsteps.

Contrary to popular belief, Galileo did not substitute science for religion. In Galileo's mind, the two were parallel and could equally exist harmoniously side by side. Galileo was a devout Catholic and continued to practice the religion throughout his lifetime. The devotion to Maria Celeste and Arcangela as well as the Convent of San Matteo also shows devotion. When a new pope or other clerical figure was elected or appointed, Galileo was among the first to congratulation, whenever proper, and/or offer service along with great humility and reverence. Galileo's most notable relationship with a member of the clergy came in the form of a long standing friendship with Cardinal Maffeo Barberini, who was eventually named as the Supreme Pontiff Urban VIII. It may have been Urban that kept Galileo out of being in such trouble as to be executed.

Galileo's work with the heavens, including stars, the universe and Copernican theories branded him as a heretic. This made it especially difficult for Galileo to publicly continue his work, particularly after the publication of the Edict of 1616 in which such activities, while not named as heresy thanks to Urban, banned the work. Galileo often met with stiff opposition as well as adulation and gratitude for permitting the world to see another possibility in addition to the previously heliocentric universe.

Style

Perspective

Galileo's Daughter was written by Dava Sobel, a former freelance writer turned author after the success of her first book, LONGITUDE, was published in 1994. Sobel considers herself to be fortunate having had the opportunity to grow up on the Bronx, make numerous visits to the Bronx Zoo, and be the daughter of well-read parents, including a mother who was trained as a chemist. Sobel states that she grew up with the belief that even girls could be involved in science.

The impetus for GALILEO'S DAUGHTER originated with a previous project, titled LETTERS TO FATHER, a collection of Suor Maria Celeste's letters to Galileo published in both Italian and English. The project, referred to as The Galileo Project donated proceeds of the book to the Poor Clares, the religious order to which Suors Maria Celeste and Archangela belonged. Eventually, people began to request that "The Galileo Project" be formed into a book of its own, with a more narrative style.

Sobel took several years to write GALILEO'S DAUGHTER because of taking time to translate many of Maria Celeste's 128 letters from Italian.

Sobel continues to lecture on Galileo and other scientific and astrological events; as a result of her work, Sobel has prompted the naming of a crater on Venus after Maria Celeste, the asteroid on Eros after Marina Gamba, and Sobel's earlier work, THE PLANETS resulted in an asteroid being registered in the author's name.

Tone

The tone used throughout GALILEO'S DAUGHTER is equal parts objective and partisan. The narration by Sobel is mainly objective, stating historical fact in an interesting way while visiting suppositions made by historians regarding missing works and correspondence. The correspondence to Suor Maria Celeste by Galileo is missing entirely, so one can only guess what might have been said in those missives.

The facts are stated without judgment, explaining such events as the illegitimacy of Galileo's three children with Marina Gamba and the decision to put aside his studies on the theory of the earth and sun to avoid formal inquisition by Rome.

The letters from Suor Maria Celeste show a great deal of love and compassion for Galileo, particularly due to his frequent and lengthy illnesses. There are also insights gained in correspondence between Galileo and friends and colleagues, including the Grand Duchess Cristina Medici, Cosimo II, as well as court documents and the letter that originally exonerated Galileo from heresy.

Suor Maria Celeste lived in the Convent of San Matteo from age 13 until her death at the age of 34. The letters from daughter to father reflect a longing to be by his side and to assist in day-to-day life.

Structure

GALILEO'S DAUGHTER by Dava Sobel is a work of nonfiction. The book contains a combination of translations of letters between Suor Maria Celeste Galilei and her father, the noted mathematician, astrologer and philosopher Galileo Galilei and narrated text, historical fact, and correspondence between Galileo in various colleagues and religious figures.

The book is separated into six parts. Part One, "To Florence" is 84 pages in length, separated into eight chapters. The eight chapters are: "She Who Was so Precious to You"; "The Grand Book the Universe"; "Bright Stars Speak of Your Virtues"; "To Half the Truth Seen and Recognized"; "In the Very Face of the Sun"; "Observant Executrix of God's Commands"; "The Malice of My Persecutors"; and "Conjecture Here among Shadows."

Part two, On Bellosguardo, is 76 pages in length; separated into 8 chapters. The chapters are: "How Our Father Is Favored"; "To Busy Myself in Your Service"; "What We Require Above All Else"; "Because of Our Zeal"; "Through My Memory of Their Eloquence"; "A Small and Trifling Body"; "On the Right Path, by the Grace of God"; "The Tempest of Our Many Torments."

Part Three, In Rome is comprised of 29 pages, broken down into four chapters. The four chapters are: "While Seeking to Immortalize Your Fame"; "Since the Lord Chastised Us with These Whips"; "The Hope of Having You Always Near"; "That I Should Be Begged to Publish a Such a Work."

Part Four, in Care of the Tuscan Embassy, Villa Medici, Rome, is comprised of 42 pages broken down into five chapters. The chapters are: "How Anxiously I Live, Awaiting Word from You"; "In the Chambers of the Holy Office of the Inquisition"; "Vainglorious Ambition, Pure Ignorance, and Inadvertence"; "Faith Vested in the Miraculous Madonna of Impruneta"; "Judgment Passed on Your Book and Your Person."

Part Five at Siena, is comprised of 31 pages broken down into four chapters. The chapters are: "Not Knowing How to Refuse Him the Keys"; "Terrible Destruction on the Feast of San Lorenzo"; "Recitation of the Penitential Psalms"; "The Book of Life, or, a Prophet Accepted in His Homeland."

Part Six from Arcetri, is comprised of 26 pages, broken down into four chapters. The chapters are: "My Soul and Its Longing"; "Until I Have This from Your Lips"; "As I Struggle to Understand"; "The Memory of the Sweetnesses."

Quotes

"'I render infinite thanks to God,' Galileo intoned after those nights of wonder, 'for being so kind as to make me alone the first observer of marvels kept hidden in obscurity for all previous centuries.'"
Page 6

"As his Paduan career increased its brilliance in the early years of the 17th century, Galileo continued struggling to meet all his expensive family responsibilities."
Page 25

"Galileo had given Venice his telescope. Now he would offer Florence the moons of Jupiter."
Page 33

"To cement the primacy of his claims, Galileo thought it politic to visit Rome and publicize his discoveries around the Eternal City."
Page 40

"At the ceremony of her investiture, Virginia relinquished her given name to be known henceforward as Suor Maria Celeste - the God name chosen for her and whispered in her heart."
Page 82

"By the time Suor Maria Celeste joined the order, the Rule of St. Clare had relaxed on some issues and tightened on others as dictated by Church policy and the individual interpretation of each covenant's mother abbess."
Page 117

"Galileo threw himself into the work on the new book with all the force that his science, his religion, his life experience, and his flair for the dramatic allowed."
Page 143

"By such equivocation, Galileo offset his persuasive, often passionate defense of Copernicus."
Page 177

"Since only a fraction of those who contracted the plague could hope to recover, the appearance of the bubo pronounced doom."
Page 200

"Galileo applied for leniency to Francesco Cardinal Barberini, his most powerful friend, although these harsh commands had actually issued from the Pope's brother Antonio,

called Cardinal Sant' Onofrio."
Page 225

"Galileo had pleaded ignorance of the more harshly worded warning. Now the consultors claimed he'd violated even the most liberal interpretation of the more lenient reproof - as in fact he had."
Page 256

"Galileo envisioned the experimental, mathematical analysis of Nature as the wave of the future: 'There will be opened a gateway into road to a large and excellent science,' he predicted, 'into which minds more piercing than mine shall penetrate to recesses still deeper.'"
Page 302

Topics for Discussion

What was Galileo's reaction when his daughters in Virginia and Livia took their vows at the convent of San Matteo, rather than find husbands as was previously planned?

What special considerations were given to Galileo's only son, Vincenzio, that were not afforded to his daughters?

How might the acquiescence of Galileo to the Medicis regarding his theories on the Sun and Moon have damaged his standing in the scientific community?

How might the lives of Galileo and his children have been altered if Galileo had married the children's mother, Marina Gamba?

Who do you consider to be Galileo's most influential and staunch supporter during his time of inquisition by the church? Explain.

What is one possible explanation as to why the letters from Galileo to his daughter Suor Maria Celeste were destroyed but not all of the letters from her to her father?

How might Galileo's supposed heresy have affected the lives of his daughters in the convent of San Matteo? How do you think the mother abbess would have reacted if Galileo had been convicted?

Which of Galileo's inventions and/or theories do you consider to be the most important and influential? Explain.