
Creation Answers

Who writes this newsletter?

This newsletter is produced by Wayne Spencer on a Quarterly basis. Its purpose is to bring creation research within the reach of Christians and provide up-to-date reliable information on creation issues. Wayne Spencer is a creation author and former teacher who has presented papers at the International Conference on Creationism and has published in various creation publications, such as the Creation Research Society Quarterly, Creation magazine, the Journal of Creation, and Origins (from the Biblical Creation Society, UK).

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A Personal Note from Wayne Spencer

Greetings,

I want to thank you all for your interest in my newsletter. This is the fifteenth year of my newsletter. Please tell others about it if you like it.

This newsletter may have the longest article I've ever written in Creation Answers. The article is about the life of Johannes Kepler. I have been wanting to study his life for some time. Now and then I like to read about the lives of great scientists of the past who were Christians. There's a long list of scientists like this and their lives are often fascinating. I've found Kepler's life incredibly interesting. There are many good lessons in his life and themes that could be explored more. Kepler lived from 1571 to 1630. This put him in the middle of the Protestant Reformation and the Catholic "Counter-Reformation." There are many interesting things about Kepler's life and I hope you enjoy the article. Kepler was a good example of how a man should be devoted to God and do good science. There was a lot of superstition people suffered from in Kepler's day. I see Kepler as helping lead people out of that era.

On September 10 a paper I wrote was published on the Answers in Genesis website, in their online journal, the Answers Journal. It was called "*Evaluating the Day Four Cratering Hypothesis.*" [CLICK to go to this.](#)

Wayne Spencer, M.S., Physics

Johannes Kepler - Great Scientist and Great Christian

Just twenty-five years after the death of Martin Luther, in the year 1571, Johannes Kepler was born in Germany. (To say Germany is simplifying a complex political history.) Many have heard of Kepler but don't know what he did. People with a background in Physics or Astronomy know he came up with three laws of planetary motion. There is much more to Kepler's story though. Johannes Kepler had a most interesting life. In this article we will take a look at his accomplishments, his Christian faith, his family and the dramatic events that happened in Europe at the time. Kepler was caught up in the Christian Reformation and the Catholic Counter-Reformation in Germany and surrounding areas. This meant he and his family were very much affected by the conflicts between Catholics and Protestants of the early 1600's. Kepler was a teacher, a mathematician, a writer of calendar books, an astronomer, and an astrologer. Yes, I did say astrologer. This is an interesting aspect of his life. How can a scientist be an astrologer? Keep reading to find out. He was married twice and had children but he had several children that died in childhood. He also had physical handicaps which he lived with all his life. Kepler's mother was accused of witchcraft but she was not tortured to death because Kepler organized a legal defense for her. I believe his mother was actually a protestant Christian.

Kepler was a protestant Christian of strong convictions. He was influenced much by Martin Luther. Also, there is documentation that he believed the Earth was just 6,000 years old and he believed God created from nothing. He spent much time and effort thinking about what we would call intelligent design - what was God's design of the universe? He also used convex lenses to make an improvement on Galileo's



Figure 1 Johannes Kepler as painted in 1610

telescope design. He lived at the same time as Galileo and corresponded with him some. He published a significant number of books and papers (in Latin usually), and even wrote a sort of science fiction story about what it would be like to go to the Moon and watch the Earth. Kepler lived in the middle of two major controversies, one was the Ptolemaic view of the solar system versus the Copernican view. This was over whether the Sun and planets orbited Earth (meaning Earth did not move), or the Earth and planets orbited the Sun (which was the Copernican idea). The second major controversy was the doctrinal and church conflicts associated with Catholicism and Protestantism.

Johannes was born in a town called Weil der Stadt in 1571. His grandfather, Sebald Kepler, was mayor of the town when Johannes was very young. This meant that the Kepler family had some money but it did not last. Johannes had two brothers and one sister. His father, Heinrich, worked off and on as a mercenary and was not very responsible. He was often away for long

periods and was somewhat abusive to his wife. He left the family for the last time when Johannes was 5 years old. Kepler's mother's name was Katharina. She was a sort of herbalist, trying to find or make substances that would heal various ailments. Understand that at this time there was little that doctors could do. Katharina had an aunt who had been burned at the stake as a witch, but Katharina herself was not a witch by all accounts. I will return to Kepler's mother later. When Johannes was just 3 years old he became very sick with small pox. Small pox had no treatment and it was common for some children to die from it. Johannes eventually recovered but not until it had permanently damaged his left eye and his fingers. Johannes was apparently somewhat neglected by his mother but his grandfather seems to have been a good man. It seems clear that most of Johannes' family were Lutherans and sincere protestants, with his father very likely being a glaring exception.

Johannes was a small thin boy but was very bright. When he was just 6 years old (1577) there was a very notable comet that appeared. His mother showed him the comet. This must have fed the boy's inquisitive nature. In the educational system there a child was sent to school in one of two tracks very early, based on whether it was believed they could do well in academics. So after some unknown period in grammar school as a child, at age 7 he was sent to a Lutheran Latin School. This was a protestant Christian school aimed at preparing children for the ministry or academics. At age 11 Kepler took an important test to determine what educational track he could take next. He scored very high and thus was given a 100% scholarship from the Duke of Wurtemberg. This meant he was on a track that would be for men who were preparing for ministry in the Lutheran Church, or perhaps for Law or some other academic career. Kepler continued to excel in his years at what was called the Lower Seminary and the Upper Seminary, or the Stiftshule. This was roughly the equivalent of high school. After

this he continued on to the University of Tubingen. He received a B.A. degree in 1588 and a M.A. degree in 1591. Then he studied theology for three additional years. But Johannes' teachers and professors came to have concerns about him that lead to them taking action to change his career direction.

Johannes Kepler learned Greek, Hebrew, and Latin, in addition to his native language of German. He studied theology, literature, mathematics, rhetoric, philosophy, and astronomy. His intention was to go into ministry in the Lutheran Church. But as a young man he was rather brash and sometimes very blunt. He came to be thought of as a good teacher but he also had a tendency to switch subjects more quickly than his students could keep up. It was common in these Lutheran schools for young adult students to do presentations and debates which were attended by the public. On a couple of these occasions Kepler defended the Copernican view of the solar system. The Copernican idea was very controversial and was still considered too radical, or maybe even heretical, by some. There were astronomers at the University who taught Kepler. They sometimes believed Copernicus but taught Ptolemy (that Earth did not move) so they would not get into trouble. But supporting Copernicus was not all that made young Kepler's professors uncomfortable.

By attending the Stift or Seminary under a full scholarship this meant that Kepler was under obligation to serve the Duke of Wurtemberg in his career. After the Seminary and University a path into ministry or a pastorate would have been logical for young Kepler except for a doctrinal issue. The Lutheran Church at the time held to a view of communion that Kepler did not agree with. There was significant animosity also at the time between Lutherans and Calvinists. The Calvinists had a view of communion more like we protestants do today. So Kepler apparently went along with the Calvinist ideas on communion but went along with Lutheran ideas on most other issues. However, he had

trouble with accepting the concept of predestination.

Kepler was appalled at some of the vicious insults thrown back and forth between Catholics and Protestants. Kepler was clearly not Catholic but he was more respectful and conciliatory toward Catholic views sometimes than his Lutheran colleagues wanted him to be. So for instance, when the Gregorian Calendar was invented and put forward as the new standard by a Papal Bull from Pope Gregory, Kepler agreed with it. Kepler went along with it and encouraged others to accept it because it truly was a better calendar. Calendars were something Kepler understood well. The world still follows the Gregorian calendar today. Kepler was a practical man who was guided by reason and by the fact that he examined the Scriptures himself in the original languages. Protestants often resisted the Gregorian calendar just because it came from the Pope. There was a growing religious tension that affected Germany, Austria, Bohemia and other areas. There had been battles between Catholics and Protestants prior to Kepler's birth also. The resolution of those fights was for city and government leaders (usually kings) to choose for the people in their area whether they would be catholic or protestant. If the king chose catholicism, then it was illegal to be protestant. So some areas were officially protestant and some were officially catholic. However sometimes there was little enforcement.

In Graz

Thus because of Kepler's tendency to accept certain controversial ideas in the eyes of his Lutheran professors, there was a sort of plot to keep him out of the ministry. Professors arranged for him to be offered a teaching position instead of going into the ministry. This put him teaching in a school in Graz, Styria and in addition he had a part-time position as district mathematician. This would have been the equivalent of teaching high school students. His teaching duties included a class on the poetry of Virgil, as

well as ethics, history, and some mathematics and astronomy.

One of his primary duties as district mathematician was to prepare calendars and publish them in books. These were not merely calendars as we think of today. They also included various advice that made prognostications about what would happen in the coming year and how to plan for it. Thus these books were mixed with some astrology. It seems very hard to imagine today but at that time there was not a clear separation in people's minds between astronomy and astrology. Astronomers of the time felt uncomfortable making these astrological predictions. Kepler apparently was astute in considering many things about what was happening at the time, political events, and weather. So Kepler never relied really on astrology. But astrological predictions were just expected of astronomers. Kepler developed a reputation among the public as making very good predictions. So astronomers (including Galileo also) made astrological predictions because they had to to keep their positions, not because they really trusted in it. I think Kepler felt that he wanted to steer people more toward reason and to not rely on astrology. One interesting comment Kepler made about astrology is below. This was after publishing a book with astrological predictions and advice, but this was in a letter to his former astronomy professor:

“Truly in all my knowledge of astrology, I know not enough with certainty that I should dare to predict with confidence any specific thing. Astrology is the foolish little daughter of mother astronomy.”

In Genesis 1 it says God made the Sun, Moon, and stars to mark seasons and days and years. This was sort of extrapolated by some Christians at the time into supporting astrological ideas somewhat. It was a concept that God used the heavens to shape and govern the lives of men. But

Christians who went along with astrology, such as certain Lutheran leaders, did not believe that future events could be reliably predicted using it. Kepler also made a statement that he disliked “**nourishing the superstition of fatheads**” referring to astrology.

While in Graz two important things happened in Kepler’s life, both in 1597. The first was the publication of his first book. The book had a long Latin title, but the short version of the title was *Mysterium Cosmographicum*. This would translate roughly as “The Cosmic Mystery” or “The Secret of the Universe.” I’ll say more about this book below. The second important thing in Graz was Kepler’s marriage (at age 24) to a young woman named Barbara Muller. Barbara Muller, though only 23, had been married twice before to husbands that both died and she had one daughter. Johannes and Barbara had a son (Heinrich) and then later a daughter named Susanna but both these children died. Political events also turned against them.

A new ruler of inner Austria came to power, Ferdinand II. He was educated by Catholic Jesuits and commenced a process of trying to force his territory back to catholicism. This led to various unfair mistreatment of protestants and many protestants had to leave the region. Protestant schools were closed. Protestant parents had to have their children baptized by catholic priests. Burials also were to be done by catholic priests. The Kepler’s daughter Susanna only lived about one month. Kepler refused the catholic burial of his daughter and was heavily fined. He also lost his teaching position. In this series of events protestants did a number of actions that provoked the catholics. This prompted the burning of many protestant books and banishment of many protestants from the region. Kepler would not have done disrespectful actions like this, but he was told to become catholic or leave. Johannes Kepler left with his wife and her daughter Regina. His wife had inherited land which they also lost. But he made an appeal

and was allowed to return due to his position as mathematician. Kepler developed somewhat of a reputation with some important catholic leaders as being almost theologically neutral because of being a mathematician. There were also some catholic astronomers who respected Kepler and they may have been of some influence at times.

Working with Tycho Brahe

Tycho Brahe was possibly the most well-known astronomer in Europe when Kepler was a young man. Though he was originally from Denmark, Tycho had recently moved and set up a new observatory near Prague. After being expelled from Graz, Kepler began looking for a different position since he had lost income. Tycho Brahe had heard of Kepler and had invited him to visit. Tycho was known for his astronomical observations. He was a nobleman and was accustomed to being generously paid by kings and princes. He lived a rich lifestyle and was a domineering man with a number of staff working under him. He had built a number of special instruments to aid him in doing accurate observations but he did not have a telescope. Tycho also had his own unique view of how the Sun, Earth, and planets were arranged. It had Earth in the center not moving but had the Sun orbiting the Earth with the planets orbiting the Sun. This model is sometimes called the Tychonian view. It was different than both the Ptolemaic system and the Copernican system.

Kepler left his family in Linz and went to Brahe for a visit but was able to land a new position working with Brahe, for Holy Roman Emperor Rudolph II in Prague. This was a perfect match professionally because Brahe had the best observational data on the planets available but he did not have mathematical skills adequate for making use of them. Kepler on the other hand, had difficulty making observations due to his eye problems but was better in mathematics than Brahe. In other respects Brahe and Kepler

were a kind of astronomer's odd couple. Their personalities conflicted at times and so Kepler worked at a separate location. Author James Voelkel made this statement about Brahe and Kepler, "The two men could not have been more different. Tycho was a nobleman, self-assured, domineering, and combative. Kepler was a commoner, sincere, reflective, peace-loving, and unassuming." (This was in Voelkel's book, "Johannes Kepler and the New Astronomy," 1999.)

There were also some oddities about Tycho Brahe. When he was young he was in a sword duel where part of his nose was cut off. As a result, he wore a prosthetic metal nose. There has been a long historical puzzle and debate over what his nose was made of. The body was exhumed twice but the question was apparently settled recently in November 2012 when some Danish and Czech researchers did chemical analysis of his remains and determined the nose must have been made of brass. Another oddity was that he had a tamed elk which he apparently raised. The elk died after drinking a lot of beer one evening.

Tycho Brahe had over 30 years of detailed observational data which he carefully guarded and would not trust to anyone. However Kepler got some access before Brahe died and was allowed to take over Brahe's position after Brahe died (in 1601). This allowed Kepler to work seriously on explaining the orbits of the planets. Without Tycho Brahe's observations, Kepler could not have made his important discoveries on planetary motion.

The Cosmic Mystery

Kepler's first book, *Mysterium Cosmographicum*, attempted to put forward an argument for the intelligent design of the universe related to the planets. Kepler thought this would make a case for the Copernican model of the solar system. Kepler believed, along with most astronomers, that God had created in a way that was orderly and good. Kepler once quoted Genesis 1:31 where God evaluated all

he had created as "very good." Little was understood about astronomical objects. Astronomers knew that comets were outside Earth's atmosphere and Tycho Brahe had shown that a "new star" (a supernova) was in space somewhere beyond the Moon. There was a concept of gravity but people thought that gravity only affected objects on Earth. Moreover, no one would quantify gravity until later when Isaac Newton came along. No one realized that gravity operated in outer space. This was part of the reason people accepted the Ptolemaic model of the solar system. They expected there to be a mathematical order because they believed in God as Creator. But they did not yet have a concept that there could be a physical cause of the motion of the planets. So in this context Kepler wanted to explain why the planets are located at their distances from the Sun. At that time the known planets were Mercury, Venus, Earth, Mars, Jupiter, and Saturn. There was no formula for gravity, it hadn't been discovered yet. Scientists sometimes used techniques in geometry more than since that was well developed from the Greeks. So Kepler applies his knowledge of geometry and comes up with a scheme for arriving at the distances to the planets that did not depend on the Ptolemaic model. It involved taking the five regular polyhedra, the five Platonic solids, and arranging them in a special sequence, with one nested inside the other. Here is Kepler's description of this, translated from his book.

"The earth's circle is the measure of all things. Circumscribe a dodecahedron around it. The circle surrounding it will be Mars. Circumscribe a tetrahedron around Mars. The circle surrounding it will be Jupiter. Circumscribe a cube around Jupiter. The surrounding circle will be Saturn. Now, inscribe an icosahedron inside the earth. The circle inscribed in it will be Venus. Inscribe an octahedron inside Venus. The circle inscribed in it will be Mercury."

The Platonic solids are pictured below in Figure 2. Then in Figure 3 is a diagram of Kepler's idea. The spheres mark off the distances to the planet orbits. This just assumed the planet orbits were perfect circles. Since Aristotle, many scholars for years had just assumed that if God created the planets, they would have circular orbits. The longer I learn about science, the more I learn that we should not be surprised if God created in a way that surprises us. In time Kepler realized his scheme of nested polyhedra didn't work. I did my own calculation using Kepler's idea for Mars' and Jupiter's orbits. It turns out the distance to Mars' orbit comes out 17% lower than the actual semimajor axis distance to Mars. For Jupiter, Kepler's nested polyhedra comes out about 6% too short compared to the actual semimajor axis distance to Jupiter.

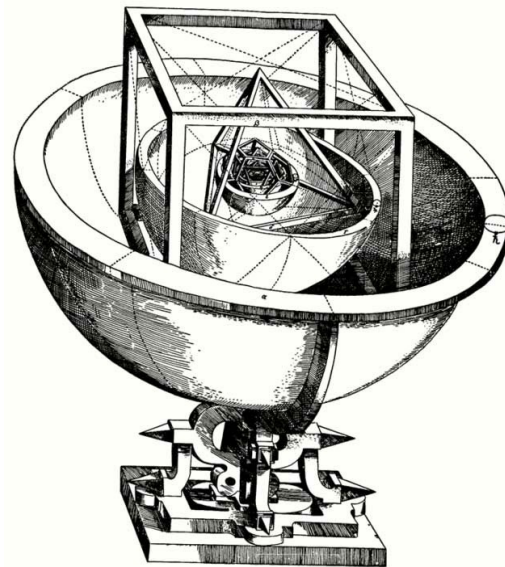


Figure 3 Kepler's model of the solar system.

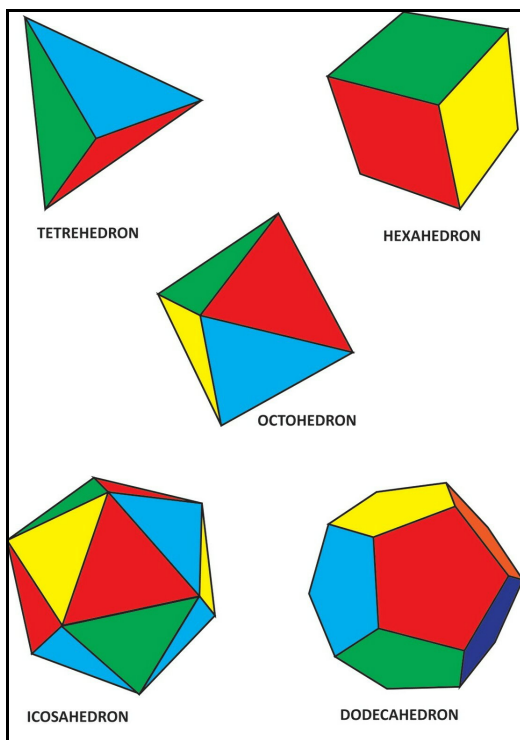


Figure 2 The five Platonic Solids (the regular polyhedra)

Planetary Motion

Kepler focused for a long time on understanding the orbit of Mars because Mars seemed to "loop-backwards" in the sky and no one could explain why. After much work and over 900 pages of long-hand calculations, Kepler eventually figured out that the planets do not follow circular paths, they follow elliptical paths. Today scientists would say there are eight planets (Pluto is no longer considered a planet). So Kepler was missing two planets in his scheme and any estimate based on circular orbits would be wrong because the planets do not follow circular orbits.

Kepler eventually arrived at three laws of planetary motion. These laws of motion were strong support for the Copernican model of the solar system but they were not completely accepted by other astronomers immediately. The first law is that the planets follow elliptical paths. The second is that a line from the Sun to the planet will sweep out equal areas in equal times. The third law is more quantitative, saying that the squares of the periods of the planets are proportional to the cubes of their average distances from the Sun.

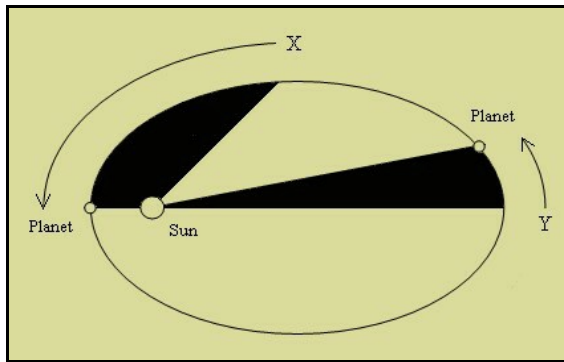


Figure 4 Kepler's second law showing how a planet can "sweep out" equal areas in equal times. The planet moves faster near the Sun than when farther away.

Kepler had made an assumption about the universe as God made it that turned out to be wrong. The planets were not arranged according to polyhedra nested inside each other. But it wasn't his faith in God that was the problem, it was more that he did not have good enough data about what God had made. Kepler wrote his first book years before he had any access to Tycho Brahe's observations. Kepler thought there would have to be a geometrical order in what God made. In a way there was a geometrical order in outer space, but not one of the kind Kepler imagined (elliptical orbits). Kepler did not know about galaxies, or clusters of galaxies. Kepler's imagined concept of the platonic solids nested inside each other is actually closer to a different kind of created order, the order in crystals. Atoms in a solid combine in geometrical patterns that are essentially combinations of the Platonic solids. The study of this is known as crystallography. These are orderly structures in the universe God made also but on an atomic scale instead of the astronomical scale.

Kepler went on to write about his discoveries and publish several books. One of his important books is *The Harmonies of the World*. In it he addresses the question of the Copernican vs the Ptolemaic models and lays out his ideas on design in the solar

system. He relates planetary orbits as being similar to what happens in musical harmonics. To me, this sort of anticipates what would later be referred to as orbital resonance. He thought of it as design, but this was without an understanding of gravity as we have today. In the Preface of this book, which he called a "Proem" he makes a statement as he is about to list the topics in the chapters of the book. "The die is cast, and I am writing the book—whether to be read by my contemporaries or by posterity matters not. Let it await its reader for a hundred years, if God Himself has been ready for His contemplator for six thousand years." So here Kepler is referring to the age of the Earth as six thousand years. I have not found any explicit statements from Kepler about how he interpreted Genesis chapter 1. There was however a letter written in 1596 in which he refers to "the kind creator who brought forth nature out of nothing. . . ." Because of this and the clear indications that he was strongly influenced by Martin Luther, I think we can infer he very likely believed in six literal days as Luther did. Kepler had a Luther Bible which he valued very highly and Kepler is said to have recited prayers written by Luther. Luther wrote very clearly in defense of six literal days in Genesis 1.

Kepler prepared a book called the Rudolphine Tables which were tables about the motion of the planets, based on Tycho Brahe's observations. These could be used to predict the motions of the planets far into the past or future. The Rudolphine Tables took Kepler many years and he was more known during his life for this rather than his "laws of planetary motion." Kepler believed that there should be a physical cause of the motion of the planets. Scientists at the time did not believe you could apply physics in space to the planets. But Kepler thought there must be some force created by the Sun that caused the motion of the planets. He also believed this force was less when a planet was farther away from the Sun. Kepler did not know what this force was. Other astronomers did not accept this idea.

However, later Isaac Newton, who was also a protestant Christian and a creationist, proved that gravity was the mysterious force Kepler imagined.

Kepler's family also went through various hardships. Kepler and his family had to move from Prague to Linz after the death of the Emperor who had supported him. Kepler was caught for a time in the city of Linz during the terrible 30 years war. This was where some protestants killed some catholic government officials and then organized an "army" and attacked Italian and Spanish forces. The protestants (including many nonchristians probably) were not much more than a mob and they were slaughtered in a terrible battle. Kepler's wife died of a sickness from disease that spread due to this war. Johannes Kepler also had other children who died. Kepler left Linz but again was allowed back in by the new Emperor. For a time Kepler was also shunned by Lutherans and was not allowed to participate in church services or communion with other Lutherans. This was mainly due to his disagreement with the Lutheran doctrine of communion. This was very troubling to him. For a time he found another group of Christian peasants near Linz that met out in the country in a small church which he fellowshiped with.

Katharina Kepler

Kepler's mother Katharina had gotten into trouble where a certain woman named Ursula Reinbold had accused her of being a witch. In the midst of the 30 year war between Catholics and protestants after Kepler's first wife died and after he remarried, Kepler's career and the fate of his family was rather uncertain. But Kepler was back in Linz after having been banished.

In those difficult times, Johannes Kepler received a letter from his sister Margarethe saying that their mother had been arrested and was being taken to court for being a witch. This threatened her life. If she had been ruled guilty she probably would have been burned at the stake, or tortured to death in some other manner. This was really

a personal grudge that Reinbold had against the Kepler family. Johannes Kepler's brother and mother had publically denounced Ursula Reinbold as a prostitute. So Reinbold came up with a story of something Katharina had done years earlier that supposedly made Reinbold ill. It seems Reinbold was deliberately making up a lie she knew to be untrue. Apparently she was doing this because if she could win a case in court declaring Katharina to be a witch, then Reinbold could get Katharina's estate. Katharina's father had been the mayor of a small town and was a businessman and had some money and property left to her apparently.

This started as a local dispute but it was escalated until it became a legal case in the capital of Germany. Reinbold had contacts in powerful positions she used against Katharina. Reinbold also assembled a list of witnesses who put forward various strange accounts of things Katharina had allegedly done. These were mainly twisted rumors and irrational imaginations. But Kepler also had influential contacts. Kepler showed a real astuteness dealing with the issue in terms of real evidence. Kepler had the evidence presented against his mother in writing instead of verbally. This gave them time and probably made it easier to refute false accusations. Johannes Kepler left Linz to go help his mother. He also wrote some letters to certain officials to make the trial wait and Kepler hired lawyers in two cities to defend his mother's case. He also helped write a 126 page legal brief answering charges against his mother that was apparently presented in court in Stuttgart, the capital. The case also went to the legal faculty at the University of Tübingen for their verdict.

Kepler's mother, as I envision her, was a rather stubborn cantankerous woman. She experimented with making herbal potions for trying to heal various ailments. This is a risky thing to do when you don't know what you're doing. There was little medical knowledge at the time and people did not

know all the effects of such mixtures. The mixtures could also spoil and become ridden with bacteria, which could make even a good "potion" go bad. Johannes Kepler always had a steadfast conviction that his mother had good intentions and was not a witch. But when you experiment with herbal mixtures as she did, at a time when people were indeed sometimes accused of witchcraft, it's easy to be misunderstood as being involved in witchcraft. Katharina Kepler also occasionally did do some things that provoked people against her some. The accusations between Reinbold and the Keplers apparently started around 1615 but the case was not resolved until Katharina was age 74 in 1621. Some books say Katharina was tortured but the best source I can find seems to indicate she was just put in a prison in poor conditions for a time. But she was threatened with torture if she would not confess to being a witch. She even had to pay for her own guards to protect her in prison.

Katharina never gave in to the pressure on her. She always denied being a witch. At one time the son of Reinbold threatened her at sword point but she escaped that. She really did show remarkable courage. Many women accused of witchcraft would have given up. People who knew them also often gave up on them, but not Johannes Kepler or his brother and sister. In a written report from the trial from the court bailiff, it says Katharina said this when they were going to decide her fate: "She fell on her knees, said the Lord's prayer, and declared that God should make a sign if she were a witch . . . God would see that the truth came to light and reveal after her death that injustice and violence had been done to her, for she knew that He would not take His Holy Spirit from her but would stand by her." So from this confession at the end of the case, I think Katharina was a Christian but she seemed to think they would likely rule against her. However, the charges against her were finally dismissed. Katharina only lived six months after this. The entire ordeal apparently had a major affect on her.

Kepler's defense of his mother is one of the things that impresses me the most about his life.

Kepler's Final Days

In Johannes Kepler's later years he did a fair amount of travel mainly to sell his RudolFINE Tables. He had paid for its printing himself. He also continued serving as a mathematician. The RudolFINE Tables was highly regarded and in demand by scholars. Note that medical doctors of the time also used astrological information in creating their medicines, so that also put this book of tables in high demand. In one of these trips to promote his book, Kepler became ill and died in a city called Regensburg. He had a number of friends there who took care of him at the end. A pastor asked him near the end what his hope of salvation was. His reply was "Solely on the merit of our savior Jesus Christ, in which is founded all refuge, solace, and deliverance." He died November 15, 1630.

I would say Kepler led the way from superstition to reason and had an important role in making astronomy a quantitative science. He did this with a conviction that God created the order and harmony in the universe so that we could appreciate it and put it to use. He also wrote important things on optics as it affected astronomy, calculated the date of Jesus' birth as 5 B.C., and solved other mathematical problems. Before Kepler died, he predicted that Mercury would pass across the Sun (called a transit) on November 7, 1631 and he gave instructions to astronomers on how they could observe it. He never lived to see this event. But other astronomers did observe it within several hours of when he had said it could be seen. This made astronomers able to see Mercury in a way it had never been observed before. It was a great vindication of his work. And this "prognostication" was not done with astrology, but mathematically with an understanding of what God had made. Kepler is someone modern scientists could still learn some good lessons from.

The Rosetta Comet Mission

As I write this newsletter a mission to study a comet is coming up to its 10 year climax. In 2004 the Rosetta spacecraft was launched. It is a project which the European Space Agency is primarily in charge of but NASA has had a major role in building a number of the instruments. There are also other nations that had contributions to it, so it is a very international effort. Rosetta will give us great detail on comet 67P/Churyumov-Gerasimenko. There have been several close up missions to photograph comets and capture some of the dust and material in a comet tail. There was also the Deep Impact mission which actually crashed a probe into a comet. Rosetta will top all these previous missions in that it will send a probe to the surface (called Philae). Because the comet's gravity will be very weak, Philae will actually fire harpoons into the comet to hold it onto the comet. The Philae probe needs to be anchored to the comet well because it will stay on the comet as the comet passes through its nearest point to the Sun. This means it will be almost like getting to ride on the comet while it is most active. To do this the spacecraft had to spend 10 years doing three flybys of Earth and one by Mars to give it the necessary speed and trajectory so it could catch comet 67P.

In September 2014 a number of very clear photos were taken of the comet so that a landing site for the Philae probe could be chosen. At this writing the landing site has been chosen and the probe will sink its teeth into the comet on November 12, 2014. So that will be a day to watch the news. Comet 67P has a very irregular shape and rough looking surface.

Today there is a sort of renewed interest in comets from scientists because the idea is becoming accepted that comets could have brought organic chemicals to Earth that life could evolve from billions of years ago. This is a false hope. There are some very simple organic chemicals in space and in comets. But living cells are far more complex and science has no explanation of how the

first cell could form from chemicals, even if conditions were ideal for it. Comets bringing organic chemicals to Earth does not explain the complex information and organization of living cells.

Johannes Kepler once called comets God's fireworks. I prefer to think of them that way and just enjoy it.



Figure 5 Comet 67P taken by the Rosetta spacecraft, Sept. 19, 2014.

The 2014 CRS Conference

In August I attended the Creation Research Society conference. This year it took place in the Cincinnati area at the Answers in Genesis Creation museum. It was well attended and was a great time. There were many interesting presentations about ongoing unfinished research. I did a presentation about comets. I went to a number of astronomy related presentations and a few others. These were short 30 minute presentations. Next year the plans are for the CRS conference to be in Dallas, so that will be a good opportunity. There were some great new things from creationists in astronomy! There was also a special get together with other creationists who have backgrounds in Physics and Astronomy. These events are enjoyable times where I catch up with friends and acquaintances, and learn about what's new in creation research.