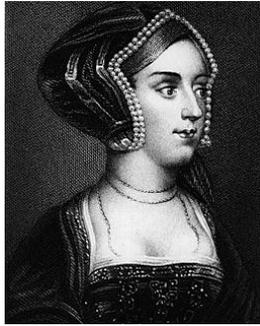


Anne Boleyn



Born – c 1500?

Married – January 1533

Executed – May 19, 1536

Anne's Early Years

For a woman who played such an important part in English history, we know remarkably little about her earliest years. Antonia Fraser puts Anne's birth at 1500 or 1501, probably at Blickling (Norfolk) and the date of birth seems to be at the end of May or early June. Other historians put Anne's birth as late as 1507 – 1509.

Anne spent part of her childhood at the court of the Archduchess Margaret. It was from there that she was transferred to the household of Mary, Henry VIII's sister, who was married to Louis XII of France. Anne's sister Mary was already in 'the French Queen's' attendance. However, when Louis died, Mary Boleyn returned to England with Mary Tudor, while Anne remained in France to attend Claude, the new French Queen. Anne remained in France for the next 6 or 7 years. Because of her position, it is possible that she was at the Field of Cloth of Gold, the famous meeting between Henry VIII and the French King, Francis I.

During her stay in France she learned to speak French fluently and developed a taste for French clothes, poetry and music.

Anne's Appearance

The legend of Anne Boleyn always includes a sixth finger and a large mole or goiter on her neck. However, one would have to wonder if a woman with these oddities (not to mention the numerous other moles and warts she was said to have) would be so captivating to the King. She may have had some small moles, as most people do, but they would be more like the attractive 'beauty marks'.

A quote from the Venetian Ambassador said she was 'not one of the handsomest women in the world...' She was considered moderately pretty. But, one must consider what 'pretty' was in the 16th century. Anne was the opposite of the pale, blonde-haired blue-eyed image of beauty. She had dark, olive-colored skin, thick brown hair and dark brown eyes which often appeared black. Those large dark eyes were often singled out in descriptions of Anne. She clearly used them, and the fascination they aroused, to her advantage whenever possible.

She was of average height and had a long, elegant neck. The argument continues as to whether or not she really had an extra finger on one of her hands.

Life in England and the Attentions of the King

Anne returned to England around 1521 where details for her marriage were being worked out. Meanwhile she went to court to attend Queen Catherine. Her first recorded appearance at Court was March 1, 1522 at a masque.

After her marriage to the heir of Ormonde fell through, she began an affair with Henry Percy, also a rich heir. Cardinal Wolsey put a stop to the romance, which could be why Anne engendered such a hatred of him later in life. It has been suggested that Wolsey stepped in on behalf of the King to remove Percy from the scene because he had already noticed Anne and wanted her for himself. Fraser asserts that this is not the case since the romance between Anne and Percy ended in 1522 and the King didn't notice Anne until 1526.

Somewhere in this time, Anne also had a relationship of some sort with the poet Sir Thomas Wyatt. Wyatt was married in 1520, so the timing of the supposed affair is uncertain. Wyatt was separated from his wife, but there could be little suggestion of his eventual marriage to Anne. Theirs appears to be more of a courtly love.

Exactly when and where Henry VIII first noticed Anne is not known. It is likely that Henry sought to make Anne his mistress, as he had her sister Mary years before. However, Anne refused Henry's advances. We don't know who first had the idea of marriage, but eventually it evolved into "Queen or nothing" for Anne.

At first, the court probably thought that Anne would just end up as another one of Henry's mistresses. But, in 1527 we see that Henry began to seek an annulment of his marriage to Catherine, making him free to marry again.

King Henry's passion for Anne can be attested to in the love letters he wrote to her when she was away from court. Henry hated writing letters, and very few documents in his own hand survive. However, 17 love letters to Anne remain and are preserved in the Vatican library.

The Rise of Anne Boleyn

In 1528, Anne's emergence at Court began. Anne also showed real interest in religious reform and may have introduced some of the 'new ideas' to Henry, and gaining the hatred of some members of the Court. When the court spent Christmas at Greenwich that year, Anne was lodged in nice apartments near those of the King.

The legal debates on the marriage of Henry and Catherine of Aragon continued on. Anne was no doubt frustrated by the lack of progress. Her famous temper and tongue showed themselves at times in famous arguments between her and Henry for all the court to see. Anne feared that Henry might go back to Catherine if the marriage could not be annulled and Anne would have wasted time that she could have used to make an advantageous marriage.

Anne was not popular with the people of England. They were upset to learn that at the Christmas celebrations of 1529, Anne was given precedence over the Duchesses of Norfolk and Suffolk, the latter of which was the King's own sister, Mary.

In this period, records show that Henry began to spend more and more on Anne, buying her clothes, jewelry, and things for her amusement such as playing cards and bows and arrows.

The waiting continued and Anne's position continued to rise. On the first day of September 1532, she was created Marquess of Pembroke, a title she held in her own right. In October, she held a position of honor at meetings between Henry and the French King in Calais.

Queen Anne

Sometime near the end of 1532, Anne finally gave way and by December she was pregnant. To avoid any questions of the legitimacy of the child, Henry was forced into action. Sometime near St. Paul's Day (January 25) 1533, Anne and Henry were secretly married. Although the King's marriage to Catherine was not dissolved, in the King's mind it had

never existed in the first place, so he was free to marry whomever he wanted. On May 23, the Archbishop officially proclaimed the marriage of Henry and Catherine was invalid.

Plans for Anne's coronation began. In preparation, she had been brought by water from Greenwich to the Tower of London dressed in cloth of gold. The barges following her were said to stretch for four miles down the Thames. On the 1st of June, she left the Tower in procession to Westminster Abbey, where she became crowned and anointed Queen in a ceremony led by Thomas Cranmer, the Archbishop of Canterbury. By August, preparations were being made for the birth of Anne's child, which was sure to be a boy. Names were being chosen, with Edward and Henry the top choices. The proclamation of the child's birth had already been written with 'prince' used to refer to the child.

Anne took to her chamber, according to custom, on August 26, 1533 and on September 7, at about 3:00 in the afternoon, the Princess Elizabeth was born. Her christening service was scaled down, but still a pleasant affair. The princess' white christening robes can currently be seen on display at Sudeley Castle in England.

Anne now knew that it was imperative that she produce a son. By January of 1534, she was pregnant again but the child was either miscarried or stillborn. In 1535, she became pregnant again but miscarried by the end of January. The child was reported to have been a boy. The Queen was quite upset, and blamed the miscarriage on her state of mind after hearing that Henry had taken a fall in jousting. She had to have known at this point that her failure to produce a living male heir was a threat to her own life, especially since the King's fancy for one of her ladies-in-waiting, Jane Seymour, began to grow.

The Fall of Anne Boleyn

Anne's enemies at court began to plot against her using the King's attentions to Jane Seymour as the catalyst for action. Cromwell began to move in action to bring down the Queen. He persuaded the King to sign a document calling for an investigation that would possibly result in charges of treason.

On April 30, 1536, Anne's musician and friend for several years, Mark Smeaton, was arrested and probably tortured into making 'revelations' about the Queen. Next, Sir Henry Norris was arrested and taken to the Tower of London. Then the Queen's own brother, George Boleyn, Lord of Rochford, was arrested.

On May 2, the Queen herself was arrested at Greenwich and was informed of the charges against her: adultery, incest and plotting to murder the King. She was then taken to the Tower by barge along the same path she had traveled to prepare for her coronation just three years earlier. In fact, she was lodged in the same rooms she had held on that occasion.

There were several more arrests. Sir Francis Weston and William Brereton were charged with adultery with the Queen. Sir Thomas Wyatt was also arrested, but later released. They were put on trial with Smeaton and Norris at Westminster Hall on May 12, 1536. The men were not allowed to defend themselves, as was the case in charges of treason. They were found guilty and received the required punishment they were to be hanged at Tyburn, cut down while still living and then drawn and quartered. On Monday the 15th, the Queen and her brother were put on trial at the Great Hall of the Tower of London. It is estimated that some 2000 people attended. Anne conducted herself in a calm and dignified manner, denying all the charges against her. Her brother was tried next, with his own wife testifying against him. Even though the evidence against them was scant, they were both found guilty, with the sentence being read by their uncle, Thomas Howard, the Duke of Norfolk. They were to be either burnt at the stake (which was the punishment for incest) or beheaded, at the discretion of the King.

The Executions

On May 17, George Boleyn was executed on Tower Hill. The other four men condemned with the Queen had their sentences commuted from the grisly fate at Tyburn to a simple beheading at the Tower with Lord Rochford.

Anne knew that her time would soon come and started to become hysterical, her behavior swinging from great levity to body-wracking sobs. She received news that an expert swordsman from Calais had been summoned, who would no doubt deliver a cleaner blow with a sharp sword than the traditional axe. Interestingly, shortly before her execution on charges of adultery, the Queen's marriage to the King was dissolved and declared invalid. One would wonder then how she could have committed adultery if she had in fact never been married to the King, but this was overlooked, as were so many other lapses of logic in the charges against Anne.

They came for Anne on the morning of May 19 to take her to the Tower Green, where she was to be afforded the dignity of a private execution. She made a short speech before kneeling at the block. Her ladies removed her headdress (which was an English gable hood not her usual French hood, according to contemporary reports) and tied a blindfold over her eyes. The sword itself had been hidden under the straw. The swordsman cut off her head with one swift stroke.

Anne's body and head were put into an arrow chest and buried in an unmarked grave in the Chapel of St. Peter ad Vincula which adjoined the Tower Green. Her body was one that was identified in renovations of the chapel under the reign of Queen Victoria, so Anne's final resting place is now marked in the marble floor.

Anne of Cleves



Born – 1515

Married – January 6, 1540

Divorced – July 1540

Died – July 16, 1557

Henry VIII remained single for over two years after Jane Seymour's death, possibly giving some credence to the thought that he genuinely mourned for her. However, it does seem that someone, possibly Thomas Cromwell, began making inquiries shortly after Jane's death about a possible foreign bride for Henry.

Henry's first marriage had been a foreign alliance of sorts, although it is almost certain that the two were truly in love for some time. His next two brides were love matches and Henry could have had little or no monetary or political gain from them.

But the events of the split from Rome left England isolated, and probably vulnerable. It was these circumstances that led Henry and his ministers to look at the possibility of a bride to secure an alliance. Henry did also want to be sure he was getting a desirable bride, so he had agents in foreign courts report to him on the appearance and other qualities of various candidates. He also sent painters to bring him images of these women.

Hans Holbein, probably the most famous of the Tudor court painters, was sent to the court of the Duke of Cleves, who had two sisters: Amelia and Anne. When Holbein went in 1539, Cleves was seen as an important potential ally in the event France and the Holy Roman Empire (who had somewhat made a truce in their long history of conflict) decided to move against the counties who had thrown off the Papal authority. England then sought alliances with countries who had been supporting the reformation of the church. Several of the Duchies and principalities along the Rhine were Lutheran. Holbein painted the sisters of the Duke of Cleves and Henry decided to have a contract drawn up for his marriage to Anne.

Although the King of France and the Emperor had gone back to their usual state of animosity, Henry proceeded with the match. The marriage took place on January 6, 1540. By then, Henry was already looking for ways to get out of the marriage.

Anne was ill-suited for life at the English court. Her upbringing in Cleves had concentrated on domestic skills and not the music and literature so popular at Henry's court. And, most famously, Henry did not find his new bride the least bit attractive and it said to have called her a 'Flanders Mare'. In addition to his personal feelings for wanting to end the marriage, there were now political ones as well. Tension between the Duke of Cleves and the Empire was increasing towards war and Henry had no desire to become involved. Last but not least, at some point, Henry had become attracted to young Kathryn Howard.

Anne was probably smart enough to know that she would only be making trouble for herself if she raised any obstacles to Henry's attempts to annul the marriage. She testified that the match had not been consummated and that her previous engagement to the son of the Duke of Lorraine had not been properly broken.

After the marriage had been dissolved, Anne accepted the honorary title as the 'King's Sister'. She was given property, including Hever Castle, formerly the home of Anne Boleyn.

Anne lived away from court quietly in the countryside until 1557 and attended the coronation of her former step-daughter, Mary I.

She is buried in a somewhat hard to find tomb in Westminster Abbey.

Catherine of Aragon



Born – December 16, 1485

Married – June 11, 1509

Divorced/Annulled – 1533

Died – January 7, 1536

Catherine of Aragon was the youngest surviving child of Ferdinand and Isabella of Spain. As was common for princesses of the day, her parents almost immediately began looking for a political match for her. When she was three years old, she was betrothed to Arthur, the son of Henry VII of England. Arthur was not even quite two at the time.

When she was almost 16, in 1501, Catherine made the journey to England. It took her three months, and her ships weathered several storms, but she safely made landfall at Plymouth on October 2, 1501. Catherine and Arthur were married on November 14, 1501 in Old St. Paul's Cathedral, London. Catherine was escorted by the groom's younger brother, Henry.

After the wedding and celebrations, the young couple moved to Ludlow Castle on the Welsh border. Less than six months later, Arthur was dead, possibly of the 'sweating sickness'. Although this marriage was short, it was very important in the history of England, as will be apparent.

Catherine was now a widow, and still young enough to be married again. Henry VII still had a son, this one much more robust and healthy than his dead older brother. The English King was interested in keeping Catherine's dowry, so 14 months after her husband's death, she was betrothed to the future Henry VIII, who was too young to marry her at the time.

By 1505, when Henry was old enough to wed, Henry VII wasn't as keen on a Spanish alliance, and young Henry was forced to repudiate the betrothal. Catherine's future was also uncertain for the next four years. When Henry VII died in 1509 one of the new young King's first actions was to marry Catherine. She was finally crowned Queen of England in a joint coronation ceremony with her husband Henry VIII on June 24, 1509.

Shortly after their marriage, Catherine found herself pregnant. This first child was a stillborn daughter born prematurely in January 1510, but this disappointment was soon followed by another pregnancy. Prince Henry was born on January 1, 1511 and he was christened on the 5th. There were great celebrations for the birth of the young prince, but they were halted by the baby's death after 52 days of

life. Catherine then had a miscarriage, followed by a short-lived son. On February 1516, she gave birth to a daughter named Mary, and this child lived. There were probably two more pregnancies, the last recorded in 1518.

Henry was growing frustrated by his lack of a male heir, but he remained a devoted husband. He had at least two mistresses that we know of: Bessie Blount and Mary Boleyn. By 1526 though, he had begun to separate from Catherine because he had fallen in love with one of her ladies (and sister of one of his mistresses): Anne Boleyn.

It is here that the lives of Henry's first and second wives begin to interweave. By the time his interest in Anne became common knowledge; Catherine was 42 years old and was no longer able to conceive. Henry's main goal now was to get a male heir, which his wife was not able to provide. Somewhere along the way, Henry began to look at the texts of Leviticus which says that if a man takes his brother's wife, they shall be childless. As evidence above, Catherine and Henry were far from childless, and still had one living child. But, that child was a girl, and didn't count in Henry's mind. The King began to petition the Pope for an annulment.

At first, Catherine was kept in the dark about Henry's plans for their annulment. When the news got to Catherine, she was very upset. She was also at a great disadvantage since the court would decide the case was far from impartial. Catherine then appealed directly to the Pope, which she felt would listen to her case since her nephew was Charles V, the Holy Roman Emperor.

The political and legal debate continued for six years. Catherine was adamant in saying that she and Arthur, her first husband and Henry's brother, did not consummate their marriage and therefore were not truly husband and wife. Catherine sought not only to retain her position, but also that of her daughter Mary.

Things came to a head in 1533 when Anne Boleyn became pregnant. Henry had to act, and his solution was to reject the power of the Pope in England and to have Thomas Cranmer, the Archbishop of Canterbury grant the annulment. Catherine was to renounce the title of Queen and would be known as the Princess Dowager of Wales, something she refused to acknowledge through the end of her life.

Catherine and her daughter were separated and she was forced to leave court. She lived for the next three years in several dank and unhealthy castles and manors with just a few servants. However, she seldom complained of her treatment and spent a great deal of time at prayer.

On January 7, 1536, Catherine died at Kimbolton Castle and was buried at Peterborough Abbey (later Peterborough Cathedral, after the dissolution of the monasteries) with the ceremony due for her position as Princess Dowager, not as a Queen of England.

Christopher Marlowe



(1564-1593)

CHRISTOPHER MARLOWE, English dramatist, the father of English tragedy and dramatic blank verse, the eldest son of a shoemaker at Canterbury, was born in that city on February 6, 1564. He was christened at St George's Church, Canterbury, on the 26th of February, 1563/4, some two months before Shakespeare's baptism at Stratford-on-Avon. His father, John Marlowe, is said to have been the grandson of John Morley or Marlowe, a substantial tanner of Canterbury. The dramatist received the rudiments of his education at the King's School, Canterbury, which he entered at Michaelmas 1578. He went to Cambridge as one of Archbishop Parker's scholars from the King's School, and matriculated at Benet College, on the 17th of March 1571, taking his B.A. degree in 1584, and that of M.A. three or four years later.

Francis Kett, burnt in 1589 for heresy, was a fellow and tutor of his college, and may have had some share in developing Marlowe's opinions in religious matters. Marlowe's classical acquirements were of a kind which was then extremely common, being based for the most part upon a minute acquaintance with Roman mythology, as revealed in Ovid's *Metamorphoses*. His spirited translation of Ovid's *Amores* (printed 1596), which was at any rate commenced at Cambridge, does not seem to point to any very intimate acquaintance with the grammar and syntax of the Latin tongue. Before 1587 he seems to have left Cambridge for London, where he attached himself to the **Lord Admiral's Company of Players**. Almost at once he began writing for the stage.

Of Marlowe's career in London, apart from his four great theatrical successes, we know hardly anything. He seems at any rate to have been associated with what was denounced as Sir Walter Raleigh's school of atheism, and to have dallied with opinions which were then regarded as putting a man outside the pale of civilized humanity.

As the result of some depositions made by Thomas Kyd under the influence of torture, the Privy Council were investigating some serious charges against Marlowe when his career was abruptly and somewhat scandalously terminated. The order had already been issued for his arrest, when he was slain in a at Deptford, at the end of May 1593. He was buried on June 1st in the churchyard of St Nicholas at Deptford. The disgraceful particulars attached to the tragedy of Marlowe in the popular mind would not seem to have appeared until four years later (1597) when Thomas Beard, the Puritan author of *The Theatre of God's Judgements*, used the death of this playmaker and atheist as one of his warning examples of the vengeance of God. Upon the embellishments of this story, such as that of Francis Meres the critic, in 1598, that Marlowe came to be "stabbed to death by a bawdy servingman, a rival of his in his lewde love," or that of William Vaughan in the *Golden Grove* of 1600, in which the unfortunate poet's dagger is thrust into his own eye in prevention of his felonious assault upon an innocent man, his guest, it is impossible now to pronounce.

We really do not know the circumstances of Marlowe's death. The probability is he was killed in a brawl, and not connected to his possible atheism or his investigation by the Privy Council. A few months before the end of his life there is reason to believe that he transferred his services from the Lord Admiral's to Lord Strange's Company, and may have thus been brought into communication with Shakespeare.

Christopher Marlowe

Marlowe's career as a dramatist lies between the years 1587 and 1593. His four greatest plays were *Tamburlaine the Great*, (1587, printed in 1590); *Dr Faustus* (1588, entered at Stationers' Hall 1601); *The Famous Tragedy of the Rich Jew of Malta* (dating perhaps from 1589, acted in 1592, printed in 1633); and *Edward the Second* (printed 1594).

Tamburlaine leapt with a bound to a place beside Kyd's *Spanish Tragedy*, and few plays have been more imitated by rivals or more keenly satirized by the jealousy and prejudice of out-distanced competitors. With many and heavy faults, there is something of genuine greatness in *Tamburlaine the Great*; and for two grave reasons it must always be remembered with distinction and mentioned with honor. It is the first play ever written in English blank verse, as distinguished from mere rhyme less decasyllabics; and it contains one of the noblest passages in the literature of the world ever written.

In *Edward the Second* the interest rises and the execution improves with the course of the advancing story. The scene of the king's deposition at Kenilworth is almost as much finer in tragic effect and poetic quality as it is shorter and less elaborate than the corresponding scene in Shakespeare's *King Richard II*. The terror of the death-scene undoubtedly rises into horror; but this horror is with skillful simplicity of treatment preserved from passing into disgust. In pure poetry, in sublime and splendid imagination, this tragedy is excelled by *Doctor Faustus*; in dramatic power and positive impression of natural effect it is certainly the masterpiece of Marlowe.

A Taming of a Shrew, the play on which Shakespeare's comedy was founded, has been attributed, without good reason, to Marlowe. The passages in the play borrowed from Marlowe's works provide an argument against, rather than for his authorship; while the humorous character of the play is not in keeping with his other work. He may have had a share in *The Troublesome Raigne of King John* (1591), and Fleay conjectured that the plays *Edward III* and *Richard III* usually included in editions of Shakespeare are at least based on plays by Marlowe. *Lust's Dominion*, printed in 1657, was incorrectly ascribed to him, and a play no longer extant, *The True History of George Scanderbague*, was assumed by Fleay on the authority of an obscure passage of Gabriel Harvey to be his work. *The Maiden's Holiday*, assigned to Day and Marlowe, was destroyed by Warburton's cook. Day was considerably Marlowe's junior, and collaboration between the two is not probable.

One of the most faultless lyrics and one of the loveliest fragments in the whole range of descriptive and fanciful poetry would have secured a place for Marlowe among the memorable men of his epoch, even if his plays had perished with himself. His *Passionate Shepherd* remains ever since unrivalled in its way — a way of pure fancy and radiant melody without break or lapse. Marlowe's poem of *Hero and Leander* (entered at Stationers' Hall in September 1593; completed and brought out by George Chapman, who divided Marlowe's work into two sestiams and added four of his own, 1598), closing with the sunrise which closes the night of the lovers' union, stands alone in its age, and far ahead of the work of any possible competitor between the death of Spenser and the dawn of Milton. In clear mastery of narrative and presentation, in melodious ease and simplicity of strength, it is not less pre-eminent than in the adorable beauty and impeccable perfection of separate lines or passages. It is doubtful whether the heroic couplet has ever been more finely handled.

The place and the value of Christopher Marlowe as a leader among English poets it would be almost impossible for historical criticism to over-estimate. To none of them all, perhaps, have so many of the greatest among them been so deeply and so directly indebted. Nor was ever any great writer's influence upon his fellows more utterly and unmixedly an influence for good. He first, and he alone, guided Shakespeare into the right way of work; his music, in which there is no echo of any man's before him, found its own echo in the more prolonged but hardly more exalted harmony of Milton's. He is the greatest discoverer, the most daring and inspired pioneer, in all our poetic literature. Before him there was neither genuine blank verse nor a genuine tragedy in our language. After his arrival the way was prepared, the paths were made straight, for Shakespeare.

Edmund Spenser

1552–1599



To understand Edmund Spenser's place in the extraordinary literary renaissance that took place in England during the last two decades of the reign of Queen Elizabeth, it is helpful to begin with the remarks of the foremost literary critic of the age, Sir Philip Sidney. In *The Defence of Poetry*, (1595), written in the early 1580s, Sidney looked back on the history of English literature and sees little to admire. He mentions the works of Geoffrey Chaucer and a few sonnets by Henry Howard, Earl of Surrey; occasional tragedies such as those printed in the 1560s in *A Mirror for Magistrates*; and one book of contemporary poetry, Spenser's *Shepherd's Calendar* (1579). Although France and Italy and even lesser nations such as Scotland had their notable poets and held them in esteem, England, according to Sidney, had recently brought forth only "bastard poets" and "poet-apes," and, consequently, the art itself had "fallen to be the laughing-stock of children." At the time Sidney was writing, moreover, England lacked altogether the sort of thriving literary culture that was so visible across the Channel in France. Sidney himself set out to repair this deficiency, and with him the other most important writer of his generation, Edmund Spenser.

Spenser's attempt to write a neoclassical epic in English was without precedent—unless, perhaps, one includes Sidney's *Arcadia* (1590), which was begun at about the same time. Spenser began, with pastoral poetry, which Spenser published in his first major work, *The Shepherd's Calendar*. A decade later, in *The Faerie Queene*, he graduated to poetry on martial and political subjects.

Conscious self-fashioning according to the practices of ancient poets, and also of more-recent ones on the Continent, was an essential part of Spenser's project—but only a part. With his eye frequently turned to Chaucer and other English authors, he set out to create poetry that was distinctively English—in religion and politics, in history and custom, in setting and language. In the best sense Spenser's art is syncretistic, drawing together elements from many traditions. Its aim, however, was to enrich the culture of his native land.

Edmund Spenser was born into the family of an obscure cloth maker named John Spenser, who belonged to the Merchant Taylors' Company and was married to a woman named Elizabeth, about whom almost nothing is known. Since parish records for the area of London where the poet grew up were destroyed in the Great Fire of 1666, his birth date is uncertain, though the dates of his schooling and a remark in one of his sonnets (*Amoretti* 60) lend credence to the date traditionally assigned, which is around 1552.

Spenser's parents took what may have been the most important step in advancing their son's fortunes by enrolling him in the Merchant Taylors' school in London. During the early 1560s, when Spenser began his studies there, it was under the able direction of a prominent humanist educator named Richard Mulcaster, who believed in thoroughly grounding his students in the classics and in Protestant Christianity, and who seems to have encouraged such extracurricular activities as musical and dramatic performances. Mulcaster was also important to Spenser's career for purely pragmatic reasons, since he had good connections with the universities and sent students of modest means such as Spenser on to them with some regularity.

In 1569, at the usual age of sixteen or seventeen, Spenser left the Merchant Taylors' School for Cambridge, where he enrolled at Pembroke Hall. Even before he arrived, however, he was already composing poetry and attracting the attention of other writers. Perhaps with the help of Mulcaster, he arranged to publish thematically linked sets of epigrams and sonnets entitled *The Visions of Petrarch* and *The Visions of Bellay*. Even in his maturity Spenser seems to have thought well of these early translations of French and Italian poetry, for he revised and reprinted them among his *Complaints* in 1591.

Such scraps of reliable information as are known about Spenser during his university days suggest that he served as a sizar (a scholar of limited means who does chores in return for room and board) and that he received his B.A. in 1573 and his M.A. in 1576 with no official marks of distinction as a scholar.

Spenser became involved in a literary circle gathered around Sidney. The group, which called itself the "Areopagus," was short-lived, and though it may have been formed with playful reference to the great literary academies of France and Italy, it seems to have been

Biography from The Poetry Foundation (edited)

Edmund Spenser

better known for its high spirits and good conversation than for its seriousness. The writers involved seem to have occupied themselves primarily with experiments in Latin prosody, attempts at various genres of new poetry based on classical models, and the promotion of English as a literary language. Spenser's direct involvement with Sidney and his circle in 1579-1580 set him on a literary course that he would pursue for the rest of his life.

Through his contact with men such as Sidney and Leicester, who were deeply involved in affairs of state, Spenser may have been emboldened to publish his *Sheperdes Calender*, which was dedicated to Sidney and dealt with sensitive political controversies of the day. Appearing in six editions before the end of the century, it became a milestone in the English literary renaissance because it was the first major published work of new poetry written along the neoclassical lines advocated by nationalistic poets such as those of the Areopagus.

Spenser also drew upon the visual arts of his day, particularly works known as "emblem books." These typically brought together three disparate elements: a series of pictures of a figurative or symbolic kind, "mottos" or pithy sayings related to the pictures but phrased in enigmatic terms, and explanations in prose or verse that interpret the mottos and pictures and draw a moral. Each of Spenser's twelve eclogues follows a more complicated version of this pattern. First there is a woodcut, then the poem, finally one or more verbal "emblems" or mottoes in various languages, which briefly sum up the nature or situation of the speakers and the themes of their songs, but which often tease the imagination with alternative interpretations.

Spenser also added important innovations to the traditional elements in the *Calender*. One involved poetic technique. In sheer variety of meter and form, his eclogues are without precedent in earlier pastoral poetry and provided an ample showcase for the experiments in prosody that so fascinated the poets of the Areopagus. Another conspicuous innovation is his organization of the poems into a seasonal progression.

In July 1580 he accepted a post as a private secretary to Arthur Grey, the new Lord Deputy of Ireland. Most of the next twenty years of the poet's life were spent in Ireland, where he served in various governmental posts, from clerk of the Privy Council in Dublin in the early years to Queen's justice and sheriff-designate for county Cork at the end of his life. His positions allowed him to acquire a considerable list of landholdings, including most prominently Kilcolman Castle with three thousand acres in county Cork, which served as his principal residence from 1588 until the year before his death in 1599.

References to Ireland appear frequently in Spenser's later poetry, and some of them reveal a good deal of gentle affection for the land and its people. In fact, he wrote the official report on the battle of Smerwick and later described it and other incidents during the turbulent years of his colonial service in his only prose work. *A Vewe of the Present State of Ireland*.

Until the late 1590s, however, Ireland provided a living, a place to write, and even literary friends. Most important, however, was Spenser's friendship with Raleigh, who was his neighbor on the former Desmond estates and who, in the summer and fall of 1589, came to see him at Kilcolman and took a personal interest in his poetry. Spenser later revealed the importance of his relationship with Raleigh by preserving a poetic account of it in *Colin Clouts Come Home Againe* and by writing the "Letter to Raleigh" and a dedicatory sonnet to him in *The Faerie Queene*. According to *Colin Clout*, it was Raleigh who arranged for Spenser to travel to London in 1590 to publish the first three books of his epic and to present them in person to Queen Elizabeth, who was pleased and expressed a desire to hear it read to her "at timely houres." So pleased was she, in fact, that she granted the poet a pension of fifty pounds a year, which was more than the parsimonious queen granted to any other poet of the period. Spenser expressed his gratitude for Raleigh's patronage by writing a sympathetic allegory of the adventurer's often turbulent and romantically tinged relationship with the queen, which appears in the story of Timias and Belphoebe in Books III, IV, and VI of *The Faerie Queene*.

When Books I-III of *The Faerie Queene* were first published in 1590, Queen Elizabeth was not the only one to admire them, and by 1596, when Books IV—VI appeared, her grant of a royal pension was not the only reward that its author had received. The poem won immediate recognition as the finest poetic achievement of its generation, and further works by the poet were evidently in demand. In 1591 he returned to London to print two other works, *Daphnaïda* and the *Complaints*. Just four years later, three more of his works were published; *Colin Clouts Come Home Againe*, and the sonnet sequence titled *Amoretti* with his widely admired *Epithalamion*. These were followed in 1596 by the last of works published during his lifetime, *Fowre Hymnes* and the *Prothalamion*. The poet's last work, the *Mutabilitie Cantos*, published posthumously in 1609, reflects on themes of time and the sorrows and uncertainties of life.

The last two years of his life allowed him little leisure to write. In 1598 rebels attacked and burned Kilcolman Castle, forcing Spenser and his family to flee to Cork. In December he returned to England, where he delivered a report on the Irish crisis at Whitehall on Christmas Eve. Three weeks later, on 13 January 1599, he died, perhaps of illness brought on by exhaustion. He was buried soon after in the south transept of Westminster Abbey in the Poets' Corner.

Tudor Who's Who

Owen Tudor

Owen Tudor was famous for his secret marriage to Catherine of Valois, the widow of King Henry VI. He fought on the side of the Lancastrians during the Wars of the Roses. He was the grandfather of King Henry VIII.

King Henry VII

Lancastrian Henry Tudor was famous for defeating the Yorkist King Richard III in the Battle of Bosworth Field and claiming the throne of England to become King Henry VII. He married the York Princess Elizabeth, joining the two houses that had been feuding in the War of the Roses. Combining the red Lancaster rose and the white York rose, he made the Tudor Rose and started the Tudor dynasty.

King Henry VIII

Best known to modern audiences from his six wives, Henry was King of England from 1509 to 1547. He established the Church of England and strengthened the position of the King.

Catherine of Aragon

Originally from Spain Catherine was engaged at three years old to Arthur, the first son of Henry VII and future King of England. The two married but the death of Prince Arthur left her a widow. His brother Henry took both the crown and his bride. After only one surviving child, Mary, Henry annulled the marriage to remarry, breaking with the Catholic Church in the process.

Anne Boleyn

The second wife of Henry VIII is most famous for how she died. After only one child, a girl named Elizabeth, Henry started to lose interest in his wife. Anne was falsely accused of treason, adultery, and incest resulting in her beheading.

Jane Seymour

As the third wife of Henry VIII, Jane was the only wife to provide a legitimate male heir, Edward. Following the birth of her son, Jane died of childbirth complications. Henry mourned her loss and, upon his own death, was buried beside her.

Anne of Cleves

Anne was the fourth wife to Henry VIII and the shortest of his marriages. The two were not attracted to each other and shortly following their wedding the marriage was annulled. Though originally from Germany Anne stayed in England for the remainder of her life and had a friendship with her former husband like a sister.

Kathryn Howard

Kathryn was young, only 19, when she became the much older Henry VIII's fifth wife. After an affair with Richard Culpeper, which amounted to treason, Kathryn was sentenced to execution. Kathryn stated "I die a Queen, but I would rather die the wife of Culpeper" at her beheading.

Katherine Parr

Katherine became the sixth and final wife of Henry VIII, ironically named after his first wife. She managed to survive both plots against her and her husband. After Henry's death Katherine remarried Thomas Seymour and the two were guardians of both Princess Elizabeth and Lady Jane Grey. She died from childbirth complications.

King Edward VI

King Edward VI was famous as the only legitimate son of King Henry VIII. He succeeded his father to the throne of England but died at the age of 15 years old. His mother was Henry's fourth wife, Jane Seymour.

Lady Jane Grey

Lady Jane Grey was famous as the Queen for Nine Days between Edward and Mary. She had a tragic short reign as the puppet Protestant Queen of England and was executed by beheading.

Queen Mary I

Tudor Who's Who

Queen Mary I was famous as the fanatical Catholic Queen of England who gained the nickname of Bloody Mary due to her persecution of Protestants and for burning them at the stake.

Queen Elizabeth I

The daughter of Henry VIII and Anne Boleyn, Elizabeth took the throne following the death of her half-sister Mary. Elizabeth's reign is known as the "Golden Age" of England. Since she never married, therefore having no children to pass the throne to, Elizabeth was the last of the Tudor monarchs.

Mary Queen of Scots

Mary Queen of Scots was famous as the tragic Catholic Queen of Scotland whose marriages led to misery and death. Imprisoned in England by her cousin, Queen Elizabeth I, she became involved in various Catholic plots and eventually fell into an English trap which proved treason against Queen Elizabeth which led to her execution by beheading.

William Cecil, Lord Burghley

William Cecil, Lord Burghley, was famous for serving Queen Elizabeth I as Diplomat, Politician and Statesman.

Sir Thomas More

Sir Thomas More was a brilliant man of principles, the author of Utopia, who was executed by beheading because he refused to bow to the will of the king above his religious beliefs and to accept King Henry VIII as the supreme head of the Church of England.

Mary Boleyn

Mary Boleyn was famous as the sister of Anne Boleyn who gave birth to a son, known as Henry Carey, who some believe to be the illegitimate son of King Henry VIII.

George Boleyn

George Boleyn was famous as the older brother of Queen Anne Boleyn who was executed on the false charge of treason and incest with his sister Queen Anne Boleyn.

Lady Jane Rochford

Lady Jane Rochford was famous as the woman who married George Boleyn and was instrumental in the events leading to the deaths of Anne Boleyn and Catherine Howard, the wives of King Henry VIII and two Queens of England.

Sir Francis Walsingham

Sir Francis Walsingham was famous as the famous Protestant Statesman who served Queen Elizabeth I as a Spymaster.

Cardinal Wolsey

Cardinal Thomas Wolsey was famous as the greatest statesman who served King Henry VIII. He fell from favor when he failed to secure a divorce for King Henry VIII from Katherine of Aragon to enable him to marry Anne Boleyn. Cardinal Thomas Wolsey built Hampton Court Palace which was later 'acquired' by the king.

Francesco Petrarch

by: Peter Sadlon



Many people come here looking for a simple answer to the question "Who was Francesco Petrarch?". If you want a simple answer it is, "He was a man."

Others seek an answer to the question, "What did Petrarch do?". The simple answer is, "Petrarch wrote a letter."

Born in exile in the town of Arezzo on July 20th, 1304 he was the first son of Pietro di Parenzo di Garzo (Ser Petracco dell'Incisa) and Eletta Canigiani. His family exiled by the same people who exiled Dante shortly before from Florence, Petrarch spent the first few years of his life in Incisa (Ancisa) not all that far away.

In 1307 his brother Gherardo was born. A few years later in 1311 the family moved to Pisa to meet the new Emperor and in 1312 to Avignon following the Holy See. But because of the popularity of the city at the time and not being able to find accommodations in Avignon the family settled in Carentras, a small town just outside the city.

In 1316 he went to study in Montpellier with Gherardo. Shortly after in 1319 his mother died of unknown causes. In 1320 he was studying law in Bologna. Petrarch despised the profession of lawyers. Although the logic of law appealed to him, the dishonest associated with the profession made his stomach turn.

In 1326 when his father dies, Petrarch abandons his study of law and turns to the classics of which he studied in small amounts during his schooling. His brother, Gherardo, enters the service of the church as Petrarch does as well. Their family moneys all gone the church would support him for the rest of his life.

On April 6th, 1327, Good Friday by the older calendar and at an Easter mass Petrarch sees Laura for the first time. Who Laura really was, and even if she really existed is a little bit of a mystery, but she is thought to be Laura de Noves, born in 1310 and married to Hugues II de Sade in 1325. Falling madly in love with a woman he may have never even talked to, Petrarch would go on to write hundreds of poems to her; which in years to come would get transported around the world and translated into just about every known language.

By 1330 Petrarch finishes his Minor Orders of the church and enters the service of Cardinal Colonna. He will spend the rest of his life in the service of the Church under different Cardinals and Bishops. He will undertake many diplomatic missions across Europe for various reasons. He will become ambassadors and be instrumental in bringing about Italian unity by fulfilling these roles.

In 1333 Petrarch takes a trip across France and the Netherlands and into Germany. Petrarch spent a great deal of his life in foreign lands and often wrote on how life itself was a journey, an all too common theme in today's literature, but one which was not fully explored before Petrarch's time.

While in Liege he comes across Cicero's *Pro Archia*. Petrarch's love for the classics only grows stronger. He begins to attempt to revive classical writings believing that their teachings have been lost.

By 1336 Petrarch begins to compile *Rerum vulgarium fragmenta* also called *Il Canzoniere*, or in English, The Song Book. By 1374 when Petrarch dies it contains 366 poems, mostly sonnets to and about the love of his life which he could never have, Laura. Of the 366 poems 263 would be written while she was alive and 103 after her death. Laura would die while Petrarch was traveling later in 1348, on Good Friday. As Petrarch writes: on the same hour of the same day but 21 years after he first saw her. She would leave behind 11 children and a husband who would remarry within a year.

A year later in 1337, and on the road again he travels to Flanders and the Brabant and then to Rome for the first time in his life. Later that year, his first child, Giovanni is born out of wedlock. Who the mother was is unknown, but by Petrarch's own account he did not treat her as well as he should have. The relationship between Petrarch and his son was a

disappointment to Francesco. He describes Giovanni as "Intelligent, perhaps even exceptionally intelligent, but he hates books".

Giovanni will stay with Petrarch until he was 20 years old (1357), at which time living in Italy, Petrarch will send his son to Avignon and in 1361 Giovanni would die from the plague.

In 1340, as Petrarch writes, on the same day he received two invitations, one from Rome and one from Paris, each asking him to accept the crown as poet laureate. He chooses Rome and on April 8th, 1341 (Easter Sunday) he is crowned by Orso dell'Anguillara, a roman noble. Petrarch's speech calls on a rebirth of classical wisdom and poetry. He develops the idea of the laurel being the symbol for poetic and literary immortality.

By 1343 Petrarch's second child, Francesca is born, again to an unnamed mother out of wedlock. Francesca later marries Francescuolo da Brossano and bares two children of her own, a daughter named Eletta in 1362 and a son, Francesco whom Petrarch adored. Francesco, the grandson, will die in 1368, probably of the plague.

In April of the same year (1343) Gherardo, Petrarch's brother, becomes a Carthusian monk. This causes Petrarch to examine his faith and write *Secretum*. It is composed of three imaginary dialogues between Petrarch and St. Augustine, who speak in the presence of Lady Truth. The *Secretum* is a "secret" book, intended for private meditation; Petrarch kept it by him for the rest of his life. It reflects his sense of inner crisis and depression, resolved by Augustine's wise counsel and recollection of his readings, particularly Virgil, Ovid, and Augustine's Confessions.

In 1345 and living in Verona Petrarch discovers a collection of letters written by Cicero and collected by him over 1000 years ago. Petrarch begins to follow Cicero's lead and starts a collection of his own letters which he called *Familiars* (Familiar Letters). His *Familiars* will end up being a collection of 350 letters in 24 books spanning from 1325 to 1366.

Petrarch would terminate *Familiars* years later and begin *Seniles* (Letters of the elder years). That collection would contain 128 letters in 18 books written between 1361 and 1373. Petrarch would spend a considerable amount of time in these collections, rewriting letters and sometimes composing new ones on the fly. He would write to kings and queens, he would write to popes and cardinals. He would write to the ghosts of Cicero and Homer.

Petrarch would live out the rest of his life in Italy. Still in the service of the church and going on diplomatic missions from time to time.

On the morning of July 19th, 1374, a day before his 70th birthday, Francesca who's family was living with him at the time, would walk into Francesco's study and find him slumped over his desk having died sometime during the night with a pen in his hand and Laura in his heart. He was buried in the parish church. Six years later, his remains were transferred to a sarcophagus built in Arquà by his son-in-law.

His writings influenced countless others during his lifetime, others such as Boccaccio to write his own great works. And centuries later others such as Shakespeare would study his works and copy his sonnets.

Petrarch lived through the harshest bouts of the plague and lost nearly everyone he knew to it. His mother and father had died in his early years but his son, his grandson, numerous friends, and of course Laura, for which his writings of her will live on forever, all died as victims of the disease.

So great were his writings that royalty treated him, the son of exiled nobles, like a king and in a letter to a friend he even goes as far as to say that he has caused his own plague to spread over Europe, one which has caused people to take up pen and paper and write and read.

And so ended the dark ages and the start of Humanism.

Galileo Galilei



Born – February 15, 1564

Died – January 8, 1642

Galileo Galilei's parents were Vincenzo Galilei and Guilia Ammannati. Vincenzo, who was born in Florence in 1520, was a teacher of music and a fine lute player. After studying music in Venice he carried out experiments on strings to support his musical theories. Guilia, who was born in Pescia, married Vincenzo in 1563 and they made their home in the countryside near Pisa. Galileo was their first child and spent his early years with his family in Pisa.

In 1572, when Galileo was eight years old, his family returned to Florence, his father's home town. However, Galileo remained in Pisa and lived for two years with Muzio Tedaldi who was related to Galileo's mother by marriage. When he reached the age of ten, Galileo left Pisa to join his family in Florence and there he was tutored by Jacopo Borghini. Once he was old enough to be educated in a monastery, his parents sent him to the Camaldolese Monastery at Vallombrosa which is situated on a magnificent forested hillside 33 km southeast of Florence. The Camaldolese Order was independent of the Benedictine Order, splitting from it in about 1012. The Order combined the solitary life of the hermit with the strict life of the monk and soon the young Galileo found this life an attractive one. He became a novice, intending to join the Order, but this did not please his father who had already decided that his eldest son should become a medical doctor.

Vincenzo had Galileo return from Vallombrosa to Florence and give up the idea of joining the Camaldolese order. He did continue his schooling in Florence, however, in a school run by the Camaldolese monks. In 1581 Vincenzo sent Galileo back to Pisa to live again with Muzio Tedaldi and now to enrol for a medical degree at the University of Pisa. Although the idea of a medical career never seems to have appealed to Galileo, his father's wish was a fairly natural one since there had been a distinguished physician in his family in the previous century. Galileo never seems to have taken medical studies seriously, attending courses on his real interests which were in mathematics and natural philosophy. His mathematics teacher at Pisa was Filippo Fantoni, who held the chair of mathematics. Galileo returned to Florence for the summer vacations and there continued to study mathematics.

In the year 1582-83 Ostilio Ricci, who was the mathematician of the Tuscan Court and a former pupil of Tartaglia, taught a course on Euclid's *Elements* at the University of Pisa which Galileo attended. During the summer of 1583 Galileo was back in Florence with his family and Vincenzo encouraged him to read Galen to further his medical studies. However Galileo, still reluctant to study medicine, invited Ricci (also in Florence where the Tuscan court spent the summer and autumn) to his home to meet his father. Ricci

tried to persuade Vincenzo to allow his son to study mathematics since this was where his interests lay. Certainly Vincenzo did not like the idea and resisted strongly but eventually he gave way a little and Galileo was able to study the works of Euclid and Archimedes from the Italian translations which Tartaglia had made. Of course he was still officially enrolled as a medical student at Pisa but eventually, by 1585, he gave up this course and left without completing his degree.

Galileo began teaching mathematics, first privately in Florence and then during 1585-86 at Siena where he held a public appointment. During the summer of 1586 he taught at Vallombrosa, and in this year he wrote his first scientific book *The little balance* [La Balancitta] which described Archimedes' method of finding the specific gravities (that is the relative densities) of substances using a balance. In the following year he travelled to Rome to visit Clavius who was professor of mathematics at the Jesuit Collegio Romano there. A topic which was very popular with the Jesuit mathematicians at this time was centres of gravity and Galileo brought with him some results which he had discovered on this topic. Despite making a very favourable impression on Clavius, Galileo failed to gain an appointment to teach mathematics at the University of Bologna.

After leaving Rome Galileo remained in contact with Clavius by correspondence and Guidobaldo del Monte was also a regular correspondent. Certainly the theorems which Galileo had proved on the centres of gravity of solids, and left in Rome, were discussed in this correspondence. It is also likely that Galileo received lecture notes from courses which had been given at the Collegio Romano, for he made copies of such material which still survive today. The correspondence began around 1588 and continued for many years. Also in 1588 Galileo received a prestigious invitation to lecture on the dimensions and location of hell in Dante's *Inferno* at the Academy in Florence.

Fantoni left the chair of mathematics at the University of Pisa in 1589 and Galileo was appointed to fill the post (although this was only a nominal position to provide financial support for Galileo). Not only did he receive strong recommendations from Clavius, but he also had acquired an excellent reputation through his lectures at the Florence Academy in the previous year. The young mathematician had rapidly acquired the reputation that was necessary to gain such a position, but there were still higher positions at which he might aim. Galileo spent three years holding this post at the university of Pisa and during this time he wrote *De Motu* a series of essays on the theory of motion which he never published. It is likely that he never published this material because he was less than satisfied with it, and this is fair for despite containing some important steps forward, it also contained some incorrect ideas. Perhaps the most important new ideas which *De Motu* contains is that one can test theories by conducting experiments. In particular the work contains his important idea that one could test theories about falling bodies using an inclined plane to slow down the rate of descent.

In 1591 Vincenzo Galilei, Galileo's father, died and since Galileo was the eldest son he had to provide financial support for the rest of the family and in particular have the necessary financial means to provide dowries for his two younger sisters. Being professor of mathematics at Pisa was not well paid, so Galileo looked for a more lucrative post. With strong recommendations from Guidobaldo del Monte, Galileo was appointed professor of mathematics at the University of Padua (the university of the Republic of Venice) in 1592 at a salary of three times what he had received at Pisa. On 7 December 1592 he gave his inaugural lecture and began a period of eighteen years at the university, years which he later described as the happiest of his life. At Padua his duties were mainly to teach Euclid's geometry and standard (geocentric) astronomy to medical students, who would need to know some astronomy in order to make use of astrology in their medical practice. However, Galileo argued against Aristotle's view of astronomy and natural philosophy in three public lectures he gave in connection with the

appearance of a New Star (now known as 'Kepler's supernova') in 1604. The belief at this time was that of Aristotle, namely that all changes in the heavens had to occur in the lunar region close to the Earth, the realm of the fixed stars being permanent. Galileo used parallax arguments to prove that the New Star could not be close to the Earth. In a personal letter written to Kepler in 1598, Galileo had stated that he was a Copernican (believer in the theories of Copernicus). However, no public sign of this belief was to appear until many years later.

At Padua, Galileo began a long term relationship with Maria Gamba, who was from Venice, but they did not marry perhaps because Galileo felt his financial situation was not good enough. In 1600 their first child Virginia was born, followed by a second daughter Livia in the following year. In 1606 their son Vincenzo was born.

We mentioned above an error in Galileo's theory of motion as he set it out in *De Motu* around 1590. He was quite mistaken in his belief that the force acting on a body was the relative difference between its specific gravity and that of the substance through which it moved. Galileo wrote to his friend Paolo Sarpi, a fine mathematician who was consultant to the Venetian government, in 1604 and it is clear from his letter that by this time he had realised his mistake. In fact he had returned to work on the theory of motion in 1602 and over the following two years, through his study of inclined planes and the pendulum, he had formulated the correct law of falling bodies and had worked out that a projectile follows a parabolic path. However, these famous results would not be published for another 35 years.

In May 1609, Galileo received a letter from Paolo Sarpi telling him about a spyglass that a Dutchman had shown in Venice. Galileo wrote in the *Starry Messenger* (Sidereus Nuncius) in April 1610:-

About ten months ago a report reached my ears that a certain Fleming had constructed a spyglass by means of which visible objects, though very distant from the eye of the observer, were distinctly seen as if nearby. Of this truly remarkable effect several experiences were related, to which some persons believed while other denied them. A few days later the report was confirmed by a letter I received from a Frenchman in Paris, Jacques Badovere, which caused me to apply myself wholeheartedly to investigate means by which I might arrive at the invention of a similar instrument. This I did soon afterwards, my basis being the doctrine of refraction.

From these reports, and using his own technical skills as a mathematician and as a craftsman, Galileo began to make a series of telescopes whose optical performance was much better than that of the Dutch instrument. His first telescope was made from available lenses and gave a magnification of about four times. To improve on this Galileo learned how to grind and polish his own lenses and by August 1609 he had an instrument with a magnification of around eight or nine. Galileo immediately saw the commercial and military applications of his telescope (which he called a *perspicillum*) for ships at sea. He kept Sarpi informed of his progress and Sarpi arranged a demonstration for the Venetian Senate. They were very impressed and, in return for a large increase in his salary, Galileo gave the sole rights for the manufacture of telescopes to the Venetian Senate. It seems a particularly good move on his part since he must have known that such rights were meaningless, particularly since he always acknowledged that the telescope was not his invention!

By the end of 1609 Galileo had turned his telescope on the night sky and began to make remarkable discoveries. Swerdlow writes (see [16]):-

In about two months, December and January, he made more discoveries that changed the world than anyone has ever made before or since.

The astronomical discoveries he made with his telescopes were described in a short book called the *Starry Messenger* published in Venice in May 1610. This work caused a sensation. Galileo claimed to have seen mountains on the Moon, to have proved the Milky Way was made up of tiny stars, and to have seen four small bodies orbiting Jupiter. These last, with an eye to getting a position in Florence, he quickly named 'the Medicean stars'. He had also sent Cosimo de Medici, the Grand Duke of Tuscany, an excellent telescope for himself.

The Venetian Senate, perhaps realising that the rights to manufacture telescopes that Galileo had given them were worthless, froze his salary. However he had succeeded in impressing Cosimo and, in June 1610, only a month after his famous little book was published, Galileo resigned his post at Padua and became Chief Mathematician at the University of Pisa (without any teaching duties) and 'Mathematician and Philosopher' to the Grand Duke of Tuscany. In 1611 he visited Rome where he was treated as a leading celebrity; the Collegio Romano put on a grand dinner with speeches to honour Galileo's remarkable discoveries. He was also made a member of the Accademia dei Lincei (in fact the sixth member) and this was an honour which was especially important to Galileo who signed himself 'Galileo Galilei Linceo' from this time on.

While in Rome, and after his return to Florence, Galileo continued to make observations with his telescope. Already in the *Starry Messenger* he had given rough periods of the four moons of Jupiter, but more precise calculations were certainly not easy since it was difficult to identify from an observation which moon was I, which was II, which III, and which IV. He made a long series of observations and was able to give accurate periods by 1612. At one stage in the calculations he became very puzzled since the data he had recorded seemed inconsistent, but he had forgotten to take into account the motion of the Earth round the sun.

Galileo first turned his telescope on Saturn on 25 July 1610 and it appeared as three bodies (his telescope was not good enough to show the rings but made them appear as lobes on either side of the planet). Continued observations were puzzling indeed to Galileo as the bodies on either side of Saturn vanished when the ring system was edge on. Also in 1610 he discovered that, when seen in the telescope, the planet Venus showed phases like those of the Moon, and therefore must orbit the Sun not the Earth. This did not enable one to decide between the Copernican system, in which everything goes round the Sun, and that proposed by Tycho Brahe in which everything but the Earth (and Moon) goes round the Sun which in turn goes round the Earth. Most astronomers of the time in fact favoured Brahe's system and indeed distinguishing between the two by experiment was beyond the instruments of the day. However, Galileo knew that all his discoveries were evidence for Copernicanism, although not a proof. In fact it was his theory of falling bodies which was the most significant in this respect, for opponents of a moving Earth argued that if the Earth rotated and a body was dropped from a tower it should fall behind the tower as the Earth rotated while it fell. Since this was not observed in practice this was taken as strong evidence that the Earth was stationary. However Galileo already knew that a body would fall in the observed manner on a rotating Earth.

Other observations made by Galileo included the observation of sunspots. He reported these in *Discourse on floating bodies* which he published in 1612 and more fully in *Letters on the sunspots* which appeared in 1613. In the following year his two daughters entered the Franciscan Convent of St Matthew outside Florence, Virginia taking the name Sister Maria Celeste and Livia the name Sister

Arcangela. Since they had been born outside of marriage, Galileo believed that they themselves should never marry. Although Galileo put forward many revolutionary correct theories, he was not correct in all cases. In particular when three comets appeared in 1618 he became involved in a controversy regarding the nature of comets. He argued that they were close to the Earth and caused by optical refraction. A serious consequence of this unfortunate argument was that the Jesuits began to see Galileo as a dangerous opponent.

Despite his private support for Copernicanism, Galileo tried to avoid controversy by not making public statements on the issue. However he was drawn into the controversy through Castelli who had been appointed to the chair of mathematics in Pisa in 1613. Castelli had been a student of Galileo's and he was also a supporter of Copernicus. At a meeting in the Medici palace in Florence in December 1613 with the Grand Duke Cosimo II and his mother the Grand Duchess Christina of Lorraine, Castelli was asked to explain the apparent contradictions between the Copernican theory and Holy Scripture. Castelli defended the Copernican position vigorously and wrote to Galileo afterwards telling him how successful he had been in putting the arguments. Galileo, less convinced that Castelli had won the argument, wrote *Letter to Castelli* to him arguing that the Bible had to be interpreted in the light of what science had shown to be true. Galileo had several opponents in Florence and they made sure that a copy of the *Letter to Castelli* was sent to the Inquisition in Rome. However, after examining its contents they found little to which they could object.

The Catholic Church's most important figure at this time in dealing with interpretations of the Holy Scripture was Cardinal Robert Bellarmine. He seems at this time to have seen little reason for the Church to be concerned regarding the Copernican theory. The point at issue was whether Copernicus had simply put forward a mathematical theory which enabled the calculation of the positions of the heavenly bodies to be made more simply or whether he was proposing a physical reality. At this time Bellarmine viewed the theory as an elegant mathematical one which did not threaten the established Christian belief regarding the structure of the universe.

In 1616 Galileo wrote the *Letter to the Grand Duchess* which vigorously attacked the followers of Aristotle. In this work, which he addressed to the Grand Duchess Christina of Lorraine, he argued strongly for a non-literal interpretation of Holy Scripture when the literal interpretation would contradict facts about the physical world proved by mathematical science. In this Galileo stated quite clearly that for him the Copernican theory is not just a mathematical calculating tool, but is a physical reality:-

I hold that the Sun is located at the centre of the revolutions of the heavenly orbs and does not change place, and that the Earth rotates on itself and moves around it. Moreover ... I confirm this view not only by refuting Ptolemy's and Aristotle's arguments, but also by producing many for the other side, especially some pertaining to physical effects whose causes perhaps cannot be determined in any other way, and other astronomical discoveries; these discoveries clearly confute the Ptolemaic system, and they agree admirably with this other position and confirm it.

Pope Paul V ordered Bellarmine to have the Sacred Congregation of the Index decide on the Copernican theory. The cardinals of the Inquisition met on 24 February 1616 and took evidence from theological experts. They condemned the teachings of Copernicus, and Bellarmine conveyed their decision to Galileo who had not been personally involved in the trial. Galileo was forbidden to hold Copernican views but later events made him less concerned about this decision of the Inquisition. Most importantly Maffeo Barberini, who was an admirer of Galileo, was elected as Pope Urban VIII. This happened just as

Galileo's book *Il saggiaiore* (The Assayer) was about to be published by the Accademia dei Lincei in 1623 and Galileo was quick to dedicate this work to the new Pope. The work described Galileo's new scientific method and contains a famous quote regarding mathematics:-

Philosophy is written in this grand book, the universe, which stands continually open to our gaze. But the book cannot be understood unless one first learns to comprehend the language and read the characters in which it is written. It is written in the language of mathematics, and its characters are triangles, circles, and other geometric figures without which it is humanly impossible to understand a single word of it; without these one is wandering in a dark labyrinth.

Pope Urban VIII invited Galileo to papal audiences on six occasions and led Galileo to believe that the Catholic Church would not make an issue of the Copernican theory. Galileo, therefore, decided to publish his views believing that he could do so without serious consequences from the Church. However by this stage in his life Galileo's health was poor with frequent bouts of severe illness and so even though he began to write his famous *Dialogue* in 1624 it took him six years to complete the work.

Galileo attempted to obtain permission from Rome to publish the *Dialogue* in 1630 but this did not prove easy. Eventually he received permission from Florence, and not Rome. In February 1632 Galileo published *Dialogue Concerning the Two Chief Systems of the World - Ptolemaic and Copernican*. It takes the form of a dialogue between Salviati, who argues for the Copernican system, and Simplicio who is an Aristotelian philosopher. The climax of the book is an argument by Salviati that the Earth moves which was based on Galileo's theory of the tides. Galileo's theory of the tides was entirely false despite being postulated after Kepler had already put forward the correct explanation. It was unfortunate, given the remarkable truths the *Dialogue* supported, that the argument which Galileo thought to give the strongest proof of Copernicus's theory should be incorrect.

Shortly after publication of *Dialogue Concerning the Two Chief Systems of the World - Ptolemaic and Copernican* the Inquisition banned its sale and ordered Galileo to appear in Rome before them. Illness prevented him from travelling to Rome until 1633. Galileo's accusation at the trial which followed was that he had breached the conditions laid down by the Inquisition in 1616. However a different version of this decision was produced at the trial rather than the one Galileo had been given at the time. The truth of the Copernican theory was not an issue therefore; it was taken as a fact at the trial that this theory was false. This was logical, of course, since the judgement of 1616 had declared it totally false.

Found guilty, Galileo was condemned to lifelong imprisonment, but the sentence was carried out somewhat sympathetically and it amounted to house arrest rather than a prison sentence. He was able to live first with the Archbishop of Siena, then later to return to his home in Arcetri, near Florence, but had to spend the rest of his life watched over by officers from the Inquisition. In 1634 he suffered a severe blow when his daughter Virginia, Sister Maria Celeste, died. She had been a great support to her father through his illnesses and Galileo was shattered and could not work for many months. When he did manage to restart work, he began to write *Discourses and mathematical demonstrations concerning the two new sciences*.

After Galileo had completed work on the *Discourses* it was smuggled out of Italy, and taken to Leyden in Holland where it was published. It was his most rigorous mathematical work which treated problems on impetus, moments, and centres of gravity. Much of this work went back to the unpublished ideas in *De Motu* from around 1590 and the improvements which he had worked out during 1602-1604. In the *Discourses* he developed his ideas of the inclined plane writing:-

I assume that the speed acquired by the same movable object over different inclinations of the plane are equal whenever the heights of those planes are equal.

He then described an experiment using a pendulum to verify his property of inclined planes and used these ideas to give a theorem on acceleration of bodies in free fall:-

The time in which a certain distance is traversed by an object moving under uniform acceleration from rest is equal to the time in which the same distance would be traversed by the same movable object moving at a uniform speed of one half the maximum and final speed of the previous uniformly accelerated motion.

After giving further results of this type he gives his famous result that the distance that a body moves from rest under uniform acceleration is proportional to the square of the time taken.

One would expect that Galileo's understanding of the pendulum, which he had since he was a young man, would have led him to design a pendulum clock. In fact he only seems to have thought of this possibility near the end of his life and around 1640 he did design the first pendulum clock. Galileo died in early 1642 but the significance of his clock design was certainly realised by his son Vincenzo who tried to make a clock to Galileo's plan, but failed.

It was a sad end for so great a man to die condemned of heresy. His will indicated that he wished to be buried beside his father in the family tomb in the Basilica of Santa Croce but his relatives feared, quite rightly, that this would provoke opposition from the Church. His body was concealed and only placed in a fine tomb in the church in 1737 by the civil authorities against the wishes of many in the Church. On 31 October 1992, 350 years after Galileo's death, Pope John Paul II gave an address on behalf of the Catholic Church in which he admitted that errors had been made by the theological advisors in the case of Galileo. He declared the Galileo case closed, but he did not admit that the Church was wrong to convict Galileo on a charge of heresy because of his belief that the Earth rotates round the sun.

Article by: *J J O'Connor and E F Robertson*

Girolamo Cardano



Born: 24 Sept 1501 in Pavia, Duchy of Milan (now Italy)

Died: 21 Sept 1576 in Rome (now Italy)

Girolamo or **Hieronimo Cardano**'s name was Hieronymus Cardanus in Latin and he is sometimes known by the English version of his name Jerome Cardan.

Girolamo Cardano was the illegitimate child of Fazio Cardano and Chiara Micheria. His father was a lawyer in Milan but his expertise in mathematics was such that he was consulted by Leonardo da Vinci on questions of geometry. In addition to his law practice, Fazio lectured on geometry, both at the University of Pavia and, for a longer spell, at the Piatti foundation in Milan. When he was in his fifties, Fazio met Chiara Micheria, who was a young widow in her thirties, struggling to raise three children.

Chiara became pregnant but, before she was due to give birth, the plague hit Milan and she was persuaded to leave the city for the relative safety of nearby Pavia to stay with wealthy friends of Fazio. Thus Cardan was born in Pavia but his mother's joy was short lived when she received news that her first three children had died of the plague in Milan. Chiara lived apart from Fazio for many years but, later in life, they did marry.

Cardan at first became his father's assistant but he was a sickly child and Fazio had to get help from two nephews when the work became too much for Cardan. However, Cardan began to wish for greater things than an assistant to his father. Fazio had taught his son mathematics and Cardan began to think of an academic career. After an argument, Fazio allowed Cardan to go university and he entered Pavia University, where his father had studied, to read medicine despite his father's wish that he should study law.

When war broke out, the university was forced to close and Cardan moved to the University of Padua to complete his studies. Shortly after this move, his father died but by this time Cardan was in the middle of a campaign to become rector of the university. He was a brilliant student but, outspoken and highly critical, Cardan was not well liked. However, his campaign for rector was successful since he beat his rival by a single vote.

Cardan squandered the small bequest from his father and turned to gambling to boost his finances. Cardan's understanding of probability meant he had an advantage over his opponents in card games, dice, and chess. He won more than he lost, but he had to keep dubious company for his gambling. Once, when he thought he was being cheated at cards, Cardan, who always carried a knife, slashed the face of his opponent. Gambling became an addiction that was to last many years and rob Cardan of valuable time, money, and reputation.

Cardan was awarded his doctorate in medicine in 1525 and applied to join the College of Physicians in Milan, where his mother still lived. The College did not wish to admit him for, despite the respect he had gained as an exceptional student, he had a reputation as a difficult man, whose unconventional, uncompromising opinions were aggressively put forward with little tact or thought for the consequences. The discovery of Cardan's illegitimate birth gave the College a reason to reject his application.

Cardan, on the advice of a friend, went to Sacco, a small village 15km from Padua. He set up a small, and not very successful, medical practice. In late 1531 Cardan married Lucia, the daughter of a neighbor Aldobello Bandarini, a captain of the local militia. Cardan's practice in Sacco did not provide enough income for him to support a wife so, in April 1532, he moved to Gallarate, near Milan. He applied again to the College of Physicians in Milan but again was not allowed membership. Unable to practice medicine, Cardan reverted, in 1533, to gambling to pay his way, but things went so badly that he was forced to pawn his wife's jewelry and even some of his furniture. Desperately seeking a change of fortune, the Cardans moved to Milan, but here they fared even worse and they had to ignominiously enter the poorhouse.

Cardan was fortunate to obtain Fazio's former post of lecturer in mathematics at the Piatti Foundation in Milan which gave him plenty of free time and he used some of this to treat a few patients, despite not being a member of the College of Physicians. Cardan achieved some near miraculous cures and his growing reputation as a doctor led to his being consulted by members of the College. His grateful patients and their relatives became whole hearted supporters and in this way, Cardan was able to build up a base of influential backers.

Girolamo Cardano

Cardan was still furious at his continuing exclusion from the College and, in 1536 he rashly published a book attacking not only the College's medical ability but their character. This was not the way to gain entry to the College and not surprisingly Cardan's application to join in 1537 was again rejected. However, two years later, after pressure from his admirers, the College modified the clause regarding legitimate birth and admitted Cardan. In the same year, Cardan's first two mathematical books were published, the second *The Practice of Arithmetic and Simple Mensuration* was a sign of greater things to come. This was the beginning of Cardan's prolific literary career writing on a diversity of topics medicine, philosophy, astronomy and theology in addition to mathematics.

In 1539 Cardan approached Tartaglia, who had achieved fame in winning a contest on solving cubics, and tried to get him to divulge the method. Tartaglia eventually agreed after getting Cardan to swear an oath that he would not publish the method until Tartaglia had himself published it. There followed a period of intense mathematical study by Cardan who worked on solving cubic and quartic equations by radical over the next six years.

One of the first problems that Cardan hit was that the formula sometimes involved square roots of negative numbers even though the answer was a 'proper' number. On 4 August 1539 Cardan wrote to Tartaglia:

"I have sent to enquire after the solution to various problems for which you have given me no answer, one of which concerns the cube equal to an unknown plus a number. I have certainly grasped this rule, but when the cube of one-third of the coefficient of the unknown is greater in value than the square of one-half of the number, then, it appears, I cannot make it fit into the equation".

Indeed Cardan gives precisely the conditions here for the formula to involve square roots of negative numbers. Tartaglia by this time greatly regretted telling Cardan the method and tried to confuse him with his reply even though Tartaglia, like Cardan, would not have understood the complex numbers now entering into mathematics.

In 1540 Cardan resigned his mathematics post at the Piatti Foundation, the vacancy being filled by Cardan's assistant Ferrari who had brilliantly solved quartic equations by radicals. From 1540 to 1542 Cardan abandoned his studies and did nothing but gamble; playing chess all day. During the years 1543-1552, Cardan lectured on medicine at the universities of Milan and Pavia, as war frequently forced the closure of the university in Pavia.

In 1545 Cardan published his greatest mathematical work *Ars Magna*. In it he gave the methods of solution of the cubic and quartic equation. In fact he had discovered in 1543 that Tartaglia was not the first to solve the cubic equation by radicals and therefore felt that he could publish despite his oath.

He also presents the first calculation with complex numbers in *Ars Magna*. Solving a particular cubic equation, he writes:-

"Dismissing mental tortures, and multiplying $5 + \sqrt{-15}$ by $5 - \sqrt{-15}$, we obtain $25 - (-15)$. Therefore the product is 40. and thus far does arithmetical subtlety go, of which this, the extreme, is, as I have said, so subtle that it is useless."

Lucia died in 1546, but Cardan seemed not greatly saddened, being more interested in the fame he had achieved from his books which were amongst the best sellers of the day. He became rector of the College of Physicians and gained the reputation of being the greatest physician in the world. Cardan received many offers from the heads of state in Europe.

John Hamilton, Archbishop of St Andrews, had suffered from asthma for ten years but gradually the frequency and severity of the attacks had grown worse. The court physicians of both the French king and German emperor did their best but ultimately failed and the Archbishop of St Andrews was near death. He turned in desperation to Cardan, promising him a huge sum if he would come to Scotland. Cardan was not lecturing when he received the plea and so accepted the offer, setting out from Milan on 23 February 1552.

Cardan was at the height of his fame and, as a consequence, his journey to Scotland was remarkable in that everywhere he went scientific communities treated him as a celebrity and the world's leading scientist. He arrived in Edinburgh on 29 June and saw the Archbishop immediately. By the time Cardan left on the 13 September, the Archbishop was already recovering. Cardan accepted over two thousand gold crowns but turned down the offer of a permanent place at the Scottish court. Within two years the archbishop let Cardan know that he had made a complete recovery.

On his return, Cardan was appointed professor of medicine at Pavia University and he was a rich and successful man. But as Cardan was at the height of his fame, he received what he called his "crowning misfortune". Cardan's eldest son, Giambatista, had qualified as a doctor in 1557 but he secretly married Brandonia di Seroni, a girl whom Cardan described as "a worthless, shameless woman." Cardan continued to support his son financially and the young couple moved in with Brandonia's parents. However, the di Seronis were only interested in what they could extort from Giambatista and his wealthy father, whilst Brandonia publicly mocked her husband for not being the father of their three children.