

io eccaduto in qualche parte come ho già detto preda questa
 scrittura con una fede aggiunta del giorno 23. Feb. 1616. Della
 mia scrittura di prima mano del medesimo giorno. della quale già
 prendai una copia di mia mano. Del rimanente mi rimetto in
 tutto, e per tutto alla solita pietà, e clemenza di questo Tribunale
 et habere in subscriptione fuit remittit ad domus supradicta
 vobis Lex Magni Ducis modo et formam iam h. b. notificari.
 Io Galileo Galilei mano propria.

Four days in February

January Term course will explore controversial Vatican-Galileo debate

by Robert Spaeth and Frank Rioux

The silencing and punishment of Galileo toward the end of a life devoted to scientific inquiry was an event of profound significance for our cultural history.

Stillman Drake
Galileo (Oxford University Press, 1980)

In the short span of four days in February 1616, a series of decisions was made in Rome that set science on a collision course with the Catholic church. The events of those fateful few days constituted a great mistake, probably one of the greatest in the intellectual history of the West. Not only did the February decisions lead to the trial and conviction for heresy of the great scientist Galileo 17 years later, but the reverberations of that trial continue to be felt today. In 1979 Pope John Paul II established a special commission to reopen the Galileo case in an effort to reduce the antagonism between science and religion it had generated three and a half centuries earlier.

What happened on those February days in 1616 to create consequences of such magnitude? The

events can be readily summarized, though their significance requires more detailed explanation.

Day 1. February 23. Pope Paul V requests that the theological consultors of the Holy Office give a formal opinion on the Copernican system.

Day 2. February 24. The consultors report to the pope, having determined that the Copernican system—the sun at the center of the universe with the earth in motion around it—is “foolish and absurd” and “erroneous in faith.”

Day 3. February 25. At a weekly meeting of the cardinals of the Holy Office (the Inquisition), Pope Paul instructs Cardinal Robert Bellarmine to tell Galileo that it was no longer permissible to “hold or defend” the censured position. If Galileo resists, the Commissary General of the Inquisition is instructed to order him officially not to “hold, defend or teach in any way” the Copernican system, under the penalty of imprisonment.

Day 4. February 26. Galileo is summoned to Bellarmine’s residence in the presence of officials of the Inquisition. Bellarmine informs Galileo of the censure of the theological consultors and of the pope’s instructions. Leaving no time for Galileo’s reply, the Commissary General—going beyond the pope’s instructions—orders Galileo that he must not “hold, defend or teach” Copernicanism “in any way” or else face imprisonment. Galileo acquiesces.

These striking events can be put in perspective with a brief summary of Galileo's life.

Galileo Galilei was born at Pisa in 1564 to a noble but financially impoverished Florentine family. His early education was under the direction of monks of the monastery of Vallombrosa. In 1578 he entered the monastery but left the order before the end of his novitiate. At his father's urging he enrolled at the University of Pisa in 1581 to study medicine. However, he soon left the university without a degree to pursue independently his real interest, mathematics. In 1589, with the help of a patron, he returned to the university as professor of mathematics. It was at Pisa that Galileo first demonstrated his scientific genius and his contempt for the Scholastic tradition in science and philosophy. His conflicts with the Aristotelian scholars were frequent and bitter, forcing Galileo to seek another position. During his short tenure at the University of Pisa he had earned a reputation as a skillful polemicist.

Through the help of the same patron who secured the Pisa position for him, Galileo was offered the vacant mathematics chair at the University of Padua in 1592. He remained there 18 years in the freedom and security of the Venetian Republic. It was there that Galileo did most of his mature scientific work. His brilliant telescopic observations at Padua showed that the Aristotelian cosmology was untenable and lent support to the Copernican view. Consequently it was also during this period that Galileo made his first public statements in support of the Copernican system. Because of Galileo's growing reputation in intellectual circles, the Venetian Republic improved his position by doubling his salary and granting him tenure for life.

Galileo, however, longed to return to his native Tuscany, preferably to a position

that would give him more time to pursue his scientific research. Galileo by this time had made several very important discoveries in astronomy, including the phases of Venus, the moons of Jupiter, the mountainous surface of the moon and numerous stars in the Milky Way. He exploited his scientific discoveries to secure in 1610, at the age of 46, the position of Ducal Philosopher and Mathematician to Cosimo II, Grand Duke of Tuscany. His friends in Padua advised against such a move, pointing out that as a Copernican he would have greater freedom to work and write in the Venetian Republic.

Galileo's Florentine period, from 1610 to his death in 1642, was punctuated by four important trips to Rome. In 1611, shortly after his successful telescopic observations, he made a triumphant journey there to accept the praise of the intellectual community for his great scientific achievements. Back in Florence, riding the crest of the wave, he pressed the heliocentric theory, leading to more conflicts with the philosophers and to the first public difficulties with the church hierarchy.

In 1613 in response to continued personal attacks by enemies, Galileo outlined his position on the relation of science and religion in a lengthy letter to a former student, Benedetto Castelli, OSB. In 1614 a young Dominican priest preached an emotional sermon at Santa Maria Novella in Florence. The reading for the day included the well-known passage from the Book of Joshua, "Sun, stand thou still" (Joshua 10:12). The preacher used the occasion to denounce Galileo and his followers as enemies of religion.

In 1615 the intrigue continued as another Dominican forwarded a copy of Galileo's letter to Castelli to the Roman Inquisition for examination. At the end of that year Galileo hurried to Rome to clear his name of suspicion and to stem the growing opposition within the Church to the Coper-

nican view of the world. Galileo brought with him his theory of the tides which he (incorrectly) believed represented conclusive evidence of the earth's motion. At this point Pope Paul decided that Galileo's behavior was becoming troublesome and called in the theological consultants on February 23, 1616.

Galileo's acquiescence to the warning of February 26 generated rumors throughout Italy that he had been humiliated and punished for his Copernican beliefs. To combat these rumors, Galileo asked Cardinal Bellarmine for a document clarifying what had occurred in February. Bellarmine complied with an affidavit dated May 26 that stated that officially Galileo had only been read the general injunction against the Copernican system, that is, the heliocentric theory was not to be "held or defended."

Galileo prudently abandoned his advocacy of the Copernican system during the years after the events of 1616. In 1621 Bellarmine, Cosimo II, and Paul V died. Pope Paul had earned a reputation for being unsympathetic toward intellectual novelty of any type. However, the new pope elected in 1623, Urban VIII—who followed the short reign of Gregory XV—was not only a highly regarded patron of the arts, he was also a good friend of Galileo. Galileo celebrated the election of Urban by dedicating his recently completed manifesto on the scientific method, *The Assayer*, to the new pope. Urban responded by granting Galileo six lengthy audiences.

What did they talk about? Copernicanism, of course, and the unfortunate censure of 1616. Urban admitted he wouldn't have issued the decree himself, but couldn't revoke it now without making the papacy appear weak in the eyes of the Protestants. Urban encouraged Galileo to resume his work and gave him permission to write on the Copernican system if he agreed to be discreet. Copernicanism could be presented and discussed as long as it was presented as one of

several reasonable hypotheses on the world order. This was the start of Galileo's great work, *Dialogue on the Two Chief Systems of the World*. It was also the beginning of the last leg of his long journey to trial at the hands of the Roman Inquisition.

The assurances from the pope gave Galileo the confidence to write again. Despite frequent and lengthy illnesses, by 1630 he had completed the *Dialogue*. This major work introduced three characters—Simplicio (an Aristotelian), Salviati (a Copernican), and Sagredo (an intelligent neutral)—who discussed at length the two world views. In spite of the pope's instructions about the importance of impartiality, the *Dialogue* seemed biased in favor of the Copernican system.

In 1631, the *Dialogue* received a license to be printed from the Master of the Sacred Palace — official censor of the Church — in Rome. Certain changes were made in the book's preface and conclusion to obtain the license and the book was printed early in 1632 in Florence.

Later in 1632 Galileo's situation deteriorated dramatically. Urban VIII suddenly turned against him, perhaps because he thought Galileo had ridiculed him in the *Dialogue*. In retaliation the pope handed the *Dialogue* over to the Inquisition for study in the light of the decree of 1616, and ordered Galileo, now old and infirm, to come to Rome to face an ecclesiastical court.

Galileo's trial began in April 1633. The charge against him was "vehement suspicion of heresy" based on the allegation that he had disobeyed the decree of 1616 not to "hold, defend, or teach" Copernicanism "in any way." Galileo defended himself by presenting a copy of the affidavit signed by Cardinal Bellarmine on May 26, 1616, which had affirmed that Galileo was only told that Copernicanism could not be "defended or held." The prohibition against "teaching" the new theory "in any way" was not in-

cluded in this affidavit.

A few months later the court offered Galileo leniency if he confessed to wrongdoing. The Bellarmine affidavit in Galileo's possession was authentic but inconsistent with the decree of 1616, which existed only in an unofficial form, written by a notary and unsigned. Galileo accepted the offer of leniency and stipulated: "I do not hold and have not held this opinion of Copernicus since the command was intimated to me that I must abandon it; for the rest, I am here in your hands — do with me what you please."

The next move by the cardinals of the Inquisition shocked Galileo. He was sentenced to in-

definite imprisonment and forbidden to publish anything for the rest of his life. The *Dialogue* was placed on the Index of Prohibited Books. Upon the intervention of a friendly bishop, Galileo's imprisonment was commuted to house arrest. The decree of 1616 had finally silenced Galileo—and an adversary relationship was created between science and theology.

Why was Galileo not found innocent? The Bellarmine affidavit in his possession would seem to have exonerated him. Scholars today disagree on the reason for his conviction. Giorgio de Santillana, author of

DIALOGO DI GALILEO GALILEI LINCEO MATEMATICO SOPRAORDINARIO

DELLO STUDIO DI PISA.

E Filosofo, e Matematico primario del

SERENISSIMO

GR.DVCA DI TOSCANA.

Due ne i congressi di quattro giornate si discorre
fopra i due

MASSIMI SISTEMI DEL MONDO
TOLEMAICO, E COPERNICANO;

*Proponendo indeterminatamente le ragioni Filosofiche, e Naturali
tanto per l'una, quanto per l'altra parte.*



CON PRI

VILEGI.

IN FIRENZA, Per Gio:Batista Landini MDCXXXII.

CON LICENZA DE' SUPERIORI.

The Crime of Galileo, believes that the decree of 1616 was a forgery, created to trap Galileo. Stillman Drake, author of many books on Galileo, believes that, although the Bellarmine affidavit was adequate to clear Galileo, the Inquisition could not afford to be accused of bringing a false charge of heresy. The papal commission of John Paul II will have to evaluate the merits of these contrary theories.

Galileo was allowed to return to Florence; though going blind and under the surveillance of the Inquisition, he continued his life-long work on the study of motion. His last and greatest book, *Discourses on Two New Sciences*, was published in Holland, beyond the reach of the Inquisition, in 1638, four years before Galileo's death. This work was also written in dialogue form and used the same cast as the *Dialogue on the Two Chief Systems of the World*.

Subsequent centuries fought the battle of science vs. religion again and again. Slowly some reconciliation occurred, but the Galileo case remained a source of divisiveness. In our own time Pope John Paul II is making an official attempt to resolve the remaining questions. The papal Galileo commission is composed of four sub-commissions—on scientific epistemology, biblical exegesis, history, and general culture. Their work is in progress.

What the papal commission might accomplish is a question tantalizing to theologians, historians, scientists, and many other interested people. John Paul II in 1983 seemed to anticipate part of the outcome in an address to a scientific meeting in Rome celebrating the 350th anniversary of Galileo's *Dialogue*. (Ironically, the meeting was held closer to the 350th anniversary of Galileo's trial.) The pope said that in Galileo's time, "there had developed between science and faith grave incomprehension, the result of misunderstandings or errors. . . ." Galileo, he admitted,

had "suffered from departments of the church." And the Church itself, learning a lesson from the Galileo affair, now had "a more mature attitude and . . . a more accurate grasp of the authority proper to her."

One member of the Galileo commission, Mario d'Addio, has announced his conclusion in advance of the commission as a whole. In an article in the March 2, 1984 issue of *L'Osservatore Romano*, the Vatican daily newspaper, d'Addio declared, "The so-called heresy of Galileo does not seem to have any foundation, neither theologically nor under canon law."

The recent Vatican actions will mean that a new round of scholarly and popular inquiries into the meaning of the Galileo case will soon commence. Saint John's intends to take advantage of this opportunity to introduce students to Galileo, to his scientific achievements, to the theology and the ecclesiastical politics of the 17th century, to Italian Renaissance culture, and to the problems of the interrelationships of science and religion. Hence our plan to teach a January Term course in Italy in 1986. Our course, "Italy: Galileo and the Church," will be taught



under the auspices of the Upper Midwest Association for Inter-cultural Education and will be open to students from Saint John's University, the College of Saint Benedict, and nine other colleges in Minnesota, Iowa, and South Dakota.

The course will begin in Rome where Galileo was tried, where the papal commission of 1616 found Copernicanism incompatible with sacred scripture, and where the Galileo case is being restudied today. At the Vatican Archives we will inspect the documents of the Galileo case and meet with principal members of the papal commission. We will also visit the Vatican Observatory and the palace near the Spanish Steps where Galileo was initially imprisoned after his trial.

In Florence we can pay homage to Galileo by visiting Santa Croce where he is buried along with Dante, Machiavelli and Michelangelo. Several of Galileo's early telescopes and other scientific instruments are on display in the elegant History of Science Museum. Not far from the museum is Santa Maria Novella, the church where Galileo was denounced from the pulpit in 1614.

Pisa is just an hour from Florence by train. Legend has it that while attending mass at the Cathedral of Pisa, Galileo's attention was diverted by a swinging sanctuary lamp. Timing the

swings of the lamp with his pulse, Galileo discovered the principle of the isochronism of the pendulum. The bell tower of the cathedral is the famous Leaning Tower where Galileo is supposed to have refuted Aristotle's theory of falling bodies. The fact that the story is apocryphal in no way detracts from the charm of this famous structure.

In Venice we will attend lectures on 17th-century science and Renaissance Italy. We will also visit the beautiful Basilica of St. Mark and the Ducal Palace, and perhaps climb the Campanile as Galileo did when he demonstrated the maritime uses of his powerful telescope to the Doge. While in Venice we will travel to Padua to see the university where Galileo taught for 18 years. The University of Padua was founded in the 13th century and lists Copernicus himself among its illustrious alumni. The lecture hall where Galileo taught has been preserved and is open to interested visitors.

From Venice we travel to Milan to tie things together before returning home. Fortunately the cities that we are drawn to in our study of the Galileo case are also important cultural centers. So

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we will have a unique opportunity to mix science with art—common practice in the 17th century.

Few events in the history of science or the history of the Church have remained as alive as the Galileo case. We believe our January Term '86 course will respond to an opportunity that will not arise often. As the papal Galileo commission continues its work in an effort to clear up a controversy that has smoldered for 350 years, American students can study the issues in the very locations where the historical events occurred.

In our January Term course on Galileo and the Church, we may take our guidance from Pope John Paul II, who said in 1979 when he established the Galileo commission: "I hope that theologians, scholars and historians, animated by a spirit of sincere collaboration, will study the Galileo case more deeply and, in frank recognition of wrongs, from whichever side they came, will dispel the mistrust that still forms an obstacle in the minds of many, to a fruitful concord between science and faith, between the church and the world." □

A Green Journey

by Jon Hassler

"... The trip (Agatha McGee's retirement gift) results in revelations and transformations that move this novel far beyond its deceptively simple pastoral beginnings to a rich, unexpected, but wholly satisfying, conclusion. . . . Hassler's characters have old-fashioned values and typical human failings; they make this a novel to restore your faith in humanity." Victoria K. Mussman, *Los Angeles Times*, February 3, 1985.

"A *Green Journey* by Jon Hassler will alienate your loved ones from you if you are not good at reading aloud. You won't be

able to resist reading passages of this warm, often humorous, more often poignant novel to them. . . .

"In this glib world of mass produced, shock-formula best sellers, Hassler's yarn is the type of book one despaired of finding years ago . . . simple, engrossing, superbly well-written and well-woven tale about ordinary people with a dignity all their own." Kathy Hoch, *Chicago Star*, January 13, 1985.

(Hassler's book was number 5 on the best-seller list for fiction in Chicago during January.)

Jon Hassler '55 is a writer-in-residence at Saint John's. *A Green Journey*, published by Morrow, is his latest novel.