

GIORDANO BRUNO

An Ever-Burning Flame of Commitment to Truth and Reason

Ashoke Mukherjee*

1566. An 18-year old Italian youth was visiting a graveyard in a corner in Thorn, a city in the Pomerania Province of Poland.

This young man had come from Naples to offer some flowers at the tomb of a well-known and much condemned astronomer. When he found it out, he was astonished beyond limits. The epitaph on the tombstone read: "I ask not the grace accorded to Paul; not that given to Peter; give me only the favour which thou didst show to the thief on the cross."¹

The man who sought only the favour a lesser soul might ask for, was Mikola Kopernigk, popularly known in the Latin version of his name: Nicolas Copernicus. And the visitor to his tomb was Filippo Giordano Bruno.

The journey begins

He was born in 1548, five years after the death of Copernicus. He entered the Dominican order in Naples at the age of 15 and started to grow up as a monk. He was quite meritorious at studies and had a free access to the libraries of the monasteries. So naturally he came across and read the book of Copernicus in Latin — *De Revolutionibus Orbium Coelestium*. He was so imbued with the ideas of the book that he felt impelled to pay some tribute to this great scientist.

It should be mentioned here that this

*Mr. Mukherjee is a Vice-President of the *Breakthrough Science Society* and a member of the Editorial Board of this journal.

book was not yet proscribed by the Roman Catholic Church. They felt uneasy about the book, understood that the content of the book did not thoroughly comply with the theological canons and the approved notions of astronomy. However, it was dedicated to the Pope of the time. And the publisher — Andreas Osiander — wrote in the preface that Copernicus discussed the revolution of the earth not as a fact but as a speculation for the benefit of astronomical calculations. Therefore it was somehow tolerated.

Giordano did not believe what was in the preface, nor could he like it. He said to himself and also to his acquaintances: It can't be true. Why should the man undertake to write such a big volume and publish it if its main tenet was a mere speculation? The more he read it, the more convinced he became. Moreover, he had perhaps also heard about and might have even read a short essay written by Copernicus in 1530 with the title *Commentariolus* which was circulated among his friends and where the heliocentric theory was proposed as a scientific thesis. He started telling his near ones, "This preface was written by one ass for the benefit of other equally ignorant asses."² [see the box-1].

Giordano lived in Nola, a south Italian city not far from Venice or Naples. The guardians of religion there were not slow to learn this and to react. They soon started a hue and cry that this anti-Christ, a de-



*Nicholas Copernicus (1473-1543).
Sculpture presented by the Polish Copernicus
Committee to the Royal Society, 1943.*

serter from the religious faith, was challenging the order of God, and thereby God himself. He must be stripped of his white robes, he must be arrested and brought to trial. He must be burnt alive ! Bruno also heard some echoes of the threats coming from all around. He understood, it was no longer safe for him to move and speak freely. He had to leave Nola, his birthplace for good. It was 1576, and he was then 28.

He roamed about within the country from place to place behind the knowledge of the church and continued to spell out his viewpoints. Why should the Copernican theory be anti-God or anti-religion? He argued that the geocentric model was also a man made system. It was established as a total theory by Ptolemy, the great Alexandrian astronomer of second century A.D. He showed the Sun, Moon, Venus, Mercury, Mars, Jupiter and Saturn as planets revolving round the Earth supposed to

be the centre of the universe. Later it was sanctified by the neo-Platonist philosophers in the third to sixth centuries A.D. and then falsely attributed to Dionysius the Aeropagite who was said to be the first Bishop of Athens. Much later Rev. Peter Lombard, a professor of astronomy in the Paris University in the 12th century gave an explicit divine argument; "Just as man is made for the sake of God — that is that he may serve Him, so the universe is made for the sake of man — that is that it may serve him; therefore is man placed at the middle point of the universe, that he may both serve and be served."³ Then in the 13th century came Thomas Aquinas, the most powerful thinker between Aristotle and Leonardo in Latin Europe, who was made a saint by the Vatican. With an extensive learning he wrote the encyclopaedia of Christian religion, titled *Summa Theologica*, elaborated on the relations of all material beings with God and carried the sacred theory of the universe to a finality. The subject was then supposed to be a closed chapter.

But to Bruno it was not so. To him the question was — does not man often err in grasping the ordination of the providence? If he errs, should he correct himself or not? Does God allow man only to make mistakes and not to rectify it when found out? He developed his cosmology on the basis of these questions, discussed these among his friends and gave answers.

The bigoted clergy viewed all this as a signal for danger. Those who will entertain these questions may not stop there but go to ask questions even about the veracity of the Providence. Bruno was declared wanted. He was accused of heresy at the Inquisition (the religious court of trial of the Roman Catholic Church) of Naples and immediately excommunicated from the order. At Rome another case was filed against him for a fictitious homicide.

He saw Italy no longer safe. He left Italy

Box – 1

What happened to Copernicus' Book?

Bruno had correctly interpreted the case. Copernicus had given his entire manuscript to his friend Georg Joachim (known in the Latin World as Rheticus) in Wittenberg. Rheticus revised the whole book and then entrusted their common friend, a Lutheran minister of Nuremberg, Andreas Osiander, with the task of publishing the work. In his old age and final years, Copernicus was not in a position to supervise the printing himself from Poland.

Osiander, in accordance with the Lutheran beliefs, requested Copernicus to revise the book in such a way as to present the hypothesis of earth's rotation not as a fact — "articles of faith" — but as the "basis of calculation", and add a preface accordingly. But Copernicus did not agree. Even so, Osiander suppressed the original preface and wrote the preface himself to satisfy both churches. He added to the original title the words *Orbium Coelestium* (of the heavenly spheres) to give the book the Ptolemaic ornamentation. Still worse, Osiander struck out all mention of Aristarchus, a Greek philosopher of antiquity, who had first proposed the earth's rotation about the sun. As a result Copernicus was criticized by many people, for more than two centuries, of plagiarism!

Meanwhile the original manuscript of the book was lost. Nobody could trace where Osiander had kept the manuscript. It was found out after 250 years. Then it was seen that Copernicus had accepted none of Osiander's suggestions and he had acknowledged his indebtedness to all the predecessors, who had already surmised about the earth's rotation.

Thus Osiander, a strictly religious person, in order to defend his religious dogma, had adopted all sorts of unscrupulous means and did not hesitate to denigrate the dignity of his friend before public view.

Source: James Jeans — *The Growth of Physical Science*, Cambridge; 1947, pp. 129-32.

in 1578 with a long face. But alas! Where could he go? Europe was then too small a space to accommodate men of Bruno's kind.

For them the bell tolled

It was a time when man had begun to learn a lot of new things. The impact of renaissance had spread beyond Italy and reached the cities of England, Holland, Germany and France. Just as the ancient people of India understood by the term "whole world" actually the contours of Jambudwip (north west India), similarly Europeans understood by that term only Europe. They had hardly any knowledge even about the history and geography of the Middle-East, the birth place of Christianity. The adventurous voyages of Columbus (1492) and Magellan (1519) had struck at the narrow sense

of geography. The merchants were then searching for newer trade regions, newer trade routes, including sea routes. Passing through newer lands they discovered men of newer types, with many variants of languages, cultures, food-habits, clothing, social norms and customs. None of these experiences matched with the scholastic declarations of the church. So questions were rising in the minds of men all around. The new inventions like the compass, the glass-ware, the clock and the printing machine created new opportunities for the study of nature and spread of knowledge. Interested people were forming new kinds of societies beyond religious orders to discuss these new acquisitions. In Naples itself, when Bruno was still a student, in 1560, one such society was formed — *Academia Secretorum Naturae*. All these encouraged further the searching minds of the time.

Science began to flourish.

But the church was not a passive on-looker. The Christian church was inextricably linked up with the medieval feudal socio-economic system. The two fed each other in the temporal and spiritual matters. The feudal rule was sanctified by the church doctrines. Questioning these doctrines was tantamount to challenging the monarchy. Already the middle class of the west European towns (burghers) — the future bourgeois class — had come upon the stage of history with the desire to bring in a new economic order in the form of free flow of capital and commodities and therefore to establish a new political order. This middle class was pretty much interested in the free cultivation of scientific knowledge. So while feudalism and religion stood united, the new class found support in the sciences and allies in the scientists. Together they rebelled against both — fundamentalism and religion [see box-2].

The church reacted as promptly and as sharply as expected. They had control over all the universities and other centres of learning. They saw to it that no person, however learned, could occupy any university chair if he did not conform to the ecclesiastical dogma; no book, containing anything opposed to conventional wisdom published and read. They also suppressed all attempts at transgressing the church wisdom with strong hands. Roger Bacon, who in the thirteenth century had stressed the importance of empirical verification of any knowledge and had the audacity to comment that diseases might not be the handiwork of the Satan but the results of the impact of some pathogenic germs, was imprisoned in the last part of his life. The church could not tolerate any undermining of the power of — not only God, but also — Satan. In the very early childhood of Bruno, in 1553, Servetus* was burnt alive

*Miguel Serveto (1511-53), a Spanish scholar and

in Geneva by the Protestants at the direct instruction of Calvin himself. His biggest crime was editing the fresh publication of Ptolemy's book "Geography" in which Judea was shown, not as the "land flowing with milk and honey" as described in the Scripture, but as an arid and barren land.

Similarly, the scientific societies were mostly dissolved either through direct threats or through bribing some of their important members to some lucrative regal or clerical position. And any non-conformism was termed heresy, infidelity, atheism, blasphemy, etc. Any body who would be labelled with these epithets would have to undergo intolerable sufferings in life. Although the fall of the church from its seat of power had already started, it was still sufficiently powerful to deal with non-conformism. It was at such a conjuncture of history that Giordano Bruno came out into the open with the banner of scientific truth, reason and values, thereby virtually challenging the authority of religion over man's mind.

The battle-fronts

Bruno thought that he would be relatively free in the protestant countries, Sweden, Switzerland or Germany, where Catholics were not the ruling clergy. The Reformation launched by Martin Luther in Germany and Jean Calvin in Geneva was a step forward towards liberation from the very many antiquated ideas of religion. It also cleared the path for new social movements in these countries. This might have encouraged Bruno for his decision. Probably he was oblivious of the fact that Servetus was persecuted by the Calvinists them-

physician, known in his Latinised name, Michael Servetus, was the first to recognize pulmonary circulation of blood. In his *Restitutio christianismi*, he subjected the church dogma to bitter criticism and called for purging of Christianity from both the catholic and protestant distortions.

Box – 2

A focus on the time

Frederick Engels, a great social scientist of the 19th century, depicted this time in an inimitable way :

“When Europe emerged from the Middle Ages, the rising middle class of the towns constituted its revolutionary element. It had conquered a recognized position within medieval feudal organization, but this position, also, had become too narrow for its expansive power. The development of the middle class, the bourgeoisie, became incompatible with the maintenance of the feudal system; the feudal system, therefore had to fall.

“But the great international centre of feudalism was the Roman Catholic Church. It united the whole of feudalized Western Europe, in spite of all internal wars, into one grand political system, opposed as much to the schismatic Greeks as to the Mohammedan countries. It surrounded feudal institutions with the halo of divine consecration. It had organized its own hierarchy on the feudal model, and, lastly, it was itself by far the most powerful feudal lord, holding as it did, fully one third of the soil of the Catholic world. Before profane feudalism could be attacked in each country and in detail, this, its sacred central organization, had to be destroyed.

“Moreover, parallel with the rise of the middle class went on the great revival of science; astronomy, mechanics, physics, anatomy, physiology, were again cultivated. And the bourgeoisie, for the development of its industrial production, required a science which ascertained the physical properties of natural objects and the modes of action of the forces of Nature. Now up to then science had but been the humble handmaid of the church, had not been allowed to over-step the limits set by faith, and for that reason had been no science at all. Science rebelled against the church; the bourgeoisie could not do without science, and therefore, had to join in the rebellion.”. F. Engels — *Socialism: Utopian & Scientific*, Beijing, 1975, pp. 24-25.

selves. Or, may be, still being a believer, he could not realize that religion and dogmatism, of whatever sect and faith, were indivisible. But as soon as he set foot in Geneva, he began to understand the point. Already Martin Luther, the great leader of Reformation, expressed quite frankly on the question of Copernican theory: “People gave ear to an upstart astrologer who strove to show that the earth revolves, not the heavens or the firmament, the sun and the moon. Whoever wishes to appear clever must devise some new system; which of all system is of course the very best. This fool[†] wishes to reverse the entire science of astronomy; but sacred scripture tells us that Joshua commanded the sun to stand still, and not the earth.”⁴ Another renowned professor of the Lutheran sect wielded the

strongest argument of the time, “The eyes are witnesses that the heavens revolve in the space of twenty four hours”,⁵ etc. Accordingly, the Calvinists told him to embrace Calvinism and forbade him to preach anything in favour of Copernican theory.

Giordano agreed for the time being. But conflicts brewed up sooner than expected. While working as a proof reader, he started talking and writing in favour of the Copernican theory, and obviously opposed the Calvinists in respect of their theology and cosmology. In no time was he arrested and forced to admit mistakes. He was excommunicated from the Calvinist order and ordered to leave the city without further ado.

1579. From Switzerland Bruno went to France. He taught philosophy successively in the universities of Lyons, Toulouse and Montpellier for two years, then came to Paris in 1581 and found there a more or less con-

[†]i.e., Copernicus — A.M.

genial atmosphere. The court of King Henry III was dominated by moderate members of catholic nobles and clergy who were tolerant to others' faith. The King appointed him to a nominal post of *lecteurs royaux* (royal lecturer) in the College de France. In 1582 Bruno published three mnemotechnical works in which he sought to recover and elaborate the ancient Egyptian magical "arts of memory" as a means to attain an intimate grasp of reality. It may be noted here that Bruno had a very sharp memory and like many contemporaries he believed in the power of ancient magic to sustain and strengthen memory. He dedicated his first book to Henry III who was very much impressed by this wandering monk. He then wrote and published a comedy, *Il Candelaio* (The Torch-bearer) in Italian, in which he sought to give a vivid picture of the social and moral turpitude in the contemporary Neapolitan society.

Next year Bruno was sent by the King to London to work in the office of his ambassador there. The two years he was in England were the best and most productive period of his tumultuous life. He moved around Oxford, Cambridge and London, talked and lectured freely among the intellectuals, earned friendship and animosity from amongst his audience and wrote profusely. It was in this period that he gradually shook off his earlier fancy towards the ancient magical arts and set on to expound his own views on cosmology and religion.

He wrote, in 1584, six books in the form of dialogue in Italian. Three of these were on the cosmological issues: (1) *Cena de le ceneri* (The Ash Wednesday Supper), (2) *De la causa, principio e Uno*, (On the Cause, Principles and One), and, (3) *Del infinito universo e mondi* (On the Infinite Universe and the Worlds). The other three were on religious and moral issues: (1) *Spaccio de la bestia trionfante* (Expulsion of the Triumphant Beast), (2) *Cabala del cavallo pe-*

gaseo (Cabal of the Horse Pegasus), and, (3) *De gli eroici furori* (On the Heroic Frenzies).

In 1585 Bruno had to return to Paris with the ambassadorial convoy. By that time the atmosphere had changed there for the worse and the Catholics had become intolerant of the Protestants as well as other dissidents. Bruno, however, was not cautious enough. He went into polemics with the catholic intellectuals and ridiculed the mathematician Fabrizio Mordente in four *Dialogues*. The next year he wrote and published in Latin *Centum et viginti articuli de natura et mundo adversus Peripateticos* (120 Articles on Nature and the World against the Peripatetics) in which he publicly criticized the Aristotelian philosophy. The Catholics could no longer tolerate him. He was denounced and forced to leave France.

From then onward he entered Germany and wandered from one city to another lecturing at the universities of Wittenberg (1588), Helmstedt (1589), Prague (1590), Frankfurt (1590-91), etc. At Wittenberg he published *Articuli centum et sexaginta adversus Mathematicos* (160 Articles against the Mathematicians) in which he strongly opposed the existing mode of mathematics teaching and urged believers of different religions to practise peaceful coexistence, mutual understanding and respect for and freedom of reciprocal dialogue. Expelled from Wittenberg he was denounced and excommunicated by the local Lutheran Church of Helmstedt. At Helmstedt he finished composing three fresh works in Latin in the form of verses following the tradition of the Greeko-Roman philosophers Epicurus, Democritus and Lucretius: (1) *De immenso et innumerabilibus* (On The Immensities and the Innumerabilities), (2) *De triplici minimo et mensura* (On the Three fold Minimum and Measurement), and (3) *De monade numero et figura* (On the Monads

Number and Shape). Then he went to Prague where he got some reluctant support from King Rudolf but could not stay for long. He came to Frankfurt to get his Latin works published, where the senate refused to grant him even a temporary residence.

Thus wherever he went he found the place too hot for him. He found shelter nowhere for long. He could if he chose to keep silent or change the shade of his philosophy. But as a staunch fighter for truth, he did not compromise. Instead, he embraced the consequent sufferings with pleasure.

The Ideas

It may be worthwhile here to review the philosophy of Bruno in order to assess the magnitude of the Papal indignation against him. In terms of religion Bruno subscribed to deism and also to pantheism, God being to him incarnate in nature without requiring any supernatural revelation. His immediate precursor was the German philosopher and Cardinal of the Church Nicholas de Cusa (1401-64) who came of a fisherman's family. Although a high official of the Catholic Church, he greatly differed from the scholastic philosophy of theology. In his *De docta ignorantia* (On the Ignorance of the Scholars) he developed the ideas of pantheism, sought exact methods for the study of nature and spoke of fitting theory to observations. In a sense he thought the universe to be infinite and said that the earth is not static, nor the centre of the universe.

From Nicholas de Cusa Giordano adopted this cosmological views and combined them with the Copernican theory. He was not a scientist, nor even a keen observer of natural phenomena. He had served science as a philosopher and interpreter. With his philosophical outlook, however, he had not only defended the Copernican theory of the earth's revolution but speculated much

frather than Copernicus, Tycho Brahe and even Kepler in some respects of cosmology. All of these three great astronomers thought, on the basis of their naked-eye observations, that the other luminous objects of the universe, the stars, planets and satellites were revolving round the sun in the same spherical in-surface of the sky at separate positions.⁶ But in his *Cena de le ceneri* and *Del infinito universo*, Bruno argued that the universe is infinite, that the other stars, like the sun, may have their own planetary family and that there are innumerable worlds like ours, similarly inhabited by intelligent beings. Of course, in tune with his time and philosophy, the argument was attired in religious terms: "It has seemed to me unworthy of the divine goodness and power to create a finite world, when able to produce beside it another and others without end, so that I have declared that there are endless particular worlds similar to this earth."⁷ Not only this. From this cosmological idea he concluded: "As the universe is infinite, no body can properly be said to be in the centre of the universe or at the frontier thereof."⁸

He developed his physical theory about the basic constituents of the universe in *De la causa* and *De monade*. Taking the cue from the great atomistic philosophers of classical antiquity, he termed the basic units of the universe as monads, which are animistic atoms carrying the miniature image of God. According to him matter and form are not separate entities, as in Aristotle, but identified into "one": "The infinity of forms under which matter appears, it does not receive from another and something external, but produces them from itself and engenders them from its bosom."⁹ He did not, however, stop at this idea but extended it even in the case of organic life, inconceivable at that time: "Therefore, matter is not without form — nay, it contains them all and since it unfolds them, carries them

concealed within itself, it is in truth all nature and the mother of all living things.”¹⁰ Moreover, since all matters are composed of the same monads, there can be no separation between the terrestrial (earthly) and the celestial (heavenly) bodies. These are parts of the same nature, same universe. There is no heaven or hell.¹¹

As a religious philosopher also Giordano struck a major departure from dogmatic theology. He opposed the idea of divinity of Jesus Christ and reasoned against the church dogma about the so-called immaculate conception of Virgin Mary. He said that Jesus had been conceived and born just like other mortals and there was nothing supernatural in that. Similarly, he also rejected the story of resurrection as false mythology¹². Jesus is great, he argued, not because of any supernatural feat but by virtue of his remarkable deeds. In the *Cena de le ceneri* he said (like Galileo three decades later) that the gospels should be read for moral teachings of true Christianity and not for extracting astronomical information. His *Spaccio* is a large satire on the contemporary superstitions, vices and corruption of the churches and the clergy of both the denominations. In this work he accused the papal chair for the encouragement of all these degenerations. In opposition to the church dogma he upheld the dignity of human life and nobility of social activities. He also urged men to seek communion with God through virtuosity and truthfulness in *De gli eroici furori*.

Bruno, in his *Del infinito universo*, reiterated the famous precept of the medieval Arab scholar Ibn Rushd that religion was a means to instruct and govern ignorant masses whereas philosophy was the object of cultivation of those who could instruct themselves and govern others. In one of his last works, *De triplici minimo*, he stated the basic scientific attitude of his time thus: “He who desires to philosophize must first

of all doubt all things. He must not assume a position in a debate before he has listened to various opinions, and considered and compared the reasons for or against. He must never judge or take up a position on the evidence of what he has heard, on the opinion of the majority, the age, merits, or prestige of the speaker concerned, but he must proceed according to the persuasion of an organic doctrine which adheres to real things and to a truth that can be understood by the light of reason.”¹³

All these opinions were enough to infuriate the church. James Jeans evaluated the situation thus : “The church had passed over the revolutionary doctrines of Copernicus without showing any active disapproval, but this new revolution touched its interests much more closely. Religion meant nothing unless the Creator was distinct from His creation; Bruno was preaching that they were identical. It was essential for the church to have room for a heaven and a hell; it had so far placed hell inside the earth, and heaven beyond the ‘sphere of the stars’. Bruno’s new cosmos left no room for a material heaven. Copernicus’ doctrines had not called for a restatement of any of the fundamental doctrines of religion; the new doctrines of Bruno called for a restatement of many, unless God was to become a mere tribal god of the Planet Earth. Living though he was on a moving planet, man might still have been the centre of God’s interest, the main concern of his creator; Bruno’s doctrines now implied that there were infinite other worlds of the same kind which might share the interest of the creator. All this was too antagonistic to the established doctrines of the church to be passed over in silence.”¹⁴

The hostility of the church towards Bruno at that time can be measured by the evaluation of the present day churchmen. The Roman Catholic Encyclopaedia, in its entry on Bruno in a recent edition pointed out

his “theological errors” thus: “..... his system of thought is an incoherent materialistic pantheism His attitude of mind towards religious truth was that of a rationalist. Personally, he failed to feel any of the vital significance of Christianity as religious system.”¹⁵ And a protestant commentator described Bruno as “a man of great capacity, with infinite knowledge, but not a trace of religion.”¹⁶

So, the church then felt, this rebel had to be silenced without further delay. But to do anything at all, he must be brought back home.

Final Reckoning

In the late 1591, Bruno received a letter from a young patrician of Venice, Giovanni Mocenigo, with an invitation to stay at his court and teach him the Egyptian magic arts of memory. He would pay for the tuition and, what was more, give him shelter and protection from the tentacles of the church. By now Giordano was tired of wandering. He was mentally hankering to see his homeland. Moreover, Venice was at the time having the most liberal environment among all the states of Italy. And after the death of the inflexible Pope Sixtus V many people including Bruno thought there might be some ease of tension over religious differences. So he started for Italy and fell into a trap.

Bruno first went to Padua. A chair of mathematics was vacant there in the university. Bruno tried for the post but was flatly refused. He came to Venice and joined Mocenigo. By this time he also composed a work *Praelectiones geometricae* (Lectures on Geometry). He started teaching his aristocratic student and delivering talks among the progressive minded Venitians.

By this time his original interest in the magical cult, the Egyptian arts of memory, had already faded out. His student

was not at all being satisfied. So when Giordano decided to make a trip to Frankfurt to get his latest works in Latin printed, Mocenigo thought he might not come back. He was also annoyed with his teacher's rational thinking in other matters. So out of desperation he informed the local Inquisition.

One morning they came. A band of clergy accompanied by a gang of royal soldiers. Bruno was taken prisoner and put on trial in May 1592. At the beginning of the next year, the Roman Inquisition demanded his extradition, brought him to Rome and put him into the jail of the palace of Sant' Uffizio (Holy Office), the headquarters of the Pope.

It was a prolonged trial. The room Bruno was housed in was provided with a lead-roof. The room became a hot furnace in summer and a Siberian hut in winter. He was meted with a small daily ration of food and water and a lavish physical coercion. The inquisitors demanded total retraction from his views.

Bruno initially tried to argue in self defence that what he had propagated were philosophical issues having nothing to do with theology. He also pointed out that he did not offend the conception of God and creation as understood by the believers. He was even pliant enough to admit mistakes on some minor details of his viewpoint. But the church demanded nothing less than a formal total and unconditional retraction. They said : “Admit mistakes, repent and pray for forgiveness; you may go back to free life; God is merciful.”

This is something Bruno could not accept. He did not succumb to torture or lurings. He remained calm and quiet and steadfast in his philosophical speculations. He firmly refused to recant. The church thought that they might be able to shatter his mental power through this lengthy persecution. It took them seven years to give

up that hope.

At last in January 1600, at the insistence of Pope Clement VIII, the Inquisition brought the trial to an end. In view of the 131 allegations against the rebel, they condemned the prisoner as an incorrigible heretic and handed him over to the royal power for befitting punishment which implied the death sentence. However, the church was never devoid of the sense of humour and decency even when trying an unrepenting rebel like Bruno. So they advised that he was to be “punished with all possible clemency, and without shedding of blood.”¹⁷ The maximum clemency, it was implied then, was shown by burning a victim alive at the stake.

On 8 February 1600, Bruno was brought before the inquisitors and the judgment was read. Smiling with efforts at them he sombrely said : “Perhaps you who condemn me are in greater fear than I who am condemned.”¹⁸

17 February 1600.

On the date of execution Giordano Bruno was taken on the Campo dei fiori of Rome (where condemned prisoners were burnt alive). He was stoutly bound to the stake with a gag on the tongue, so that he might not cry in pain; or perhaps so that he might not utter any heresy to the visitors at the last hour. One of the inquisitors asked him for the last time : “Would you like to repent to God at this last hour of your life so that He may not throw you in the eternal fire of hell”?

Bruno said — actually he only moved his head slightly to and fro to indicate — “No”.

At the gesture of the inquisitor, fire was lit up with high flames which engulfed the body of the rebel. Thus, with a much higher level of ethics, created by his scientific spirit, Bruno died the heroic death of a martyr.

The church wanted to wipe out his name from history through prohibition. The ver-



Giordano Bruno (1548-1600)

dict of the Inquisition on 20 January 1600 which had virtually uttered death sentence on Bruno, also declared : “Furthermore, we condemn, we reprobate and we prohibit all your aforesaid and your other books and writings as heretical and erroneous, containing many heresies and errors, and we ordain that all of them which have come or may come in future into the hands of the Holy Office shall be publicly destroyed and burnt in the St. Peter square before the steps and that they shall be placed upon the Index of Forbidden Books.”¹⁹ Accordingly, all his books were collected and set on fire.

But Bruno lived on. The advancing frontier of science, the truth-seeking scientists and historians kept his name alive. William Gilbert (1540-1603), the personal physician to Queen Elizabeth, wrote a book *De Magnete magneticisque Corporibus et de magno Magnete Tellure* (On the Magnet and Mag-

netic Bodies and on the Great Magnet the Earth) which was also published in 1600. It was the first book of physics dealing with magnetism and statical electricity. Its last chapter gave a hypothetical model of the universe which was Bruno's cosmology in toto without mentioning his name. In 1651 another book of the same author was posthumously published, *On Our Sublunary World, a New Philosophy*, in which the same ideas were found elaborated and attributed to Bruno.

Thomas Harriot, a noted mathematician and astronomer of England, was another contemporary admirer of Bruno. He tried to convince Kepler through correspondence about the infinite universe theory of Bruno. He and his friends founded a large collection of Bruno's works to be made privately available to those interested despite the church prohibition.

Then came Galileo Galilei (1564-1642). It was he who was offered the chair of mathematics in the Padua University in 1592. He not only gave birth to theoretical and experimental systematics in physics but also, with the help of telescopic observations, developed the Copernican theory in various directions and ensured its final victory. "In this and similar ways", Jeans commented, "the spirit of Bruno lived on, and in its own time produced even greater changes in thought than the hypotheses of Copernicus."²⁰

In the second part of the nineteenth century, when Italian Resorgimento (a great movement for political unification of Italy) was launched by Mazzini and Garibaldi, Bruno became a great source of inspiration, a symbol of free thinking. In 1889 the people installed two statues of Bruno, one at Nola, his birth place, and another at the *Campo dei fiori* where he was incarcerated, despite strongest opposition from the clergy.

Still relevant

Four centuries have passed by since Bruno's death. By this time science won a resounding victory over religion — both as an intellectual force and as a collective human institution. The clergy has been toppled from the citadel of spiritual and temporal power to control and contain the growth of science. In this situation it may be worthwhile to ask : What is the relevance of recalling and cultivating Bruno today? What is the use of recollecting the old stories of the bygone days?

Actually, in the present situation the life and struggle of Bruno are becoming all the more relevant. From amongst the middle class of the sixteenth or seventeenth century, who found allies in science to rebel against feudalism, have evolved, over these four hundred years, the megabillionaire tycoons of today. For this class today science is required to the extent it generates production and delivery techniques, ever newer commodities including the saleable S&T information. But they reject science when it fosters the scientific outlook to judge all questions of life in the yardsticks of fact, reason and progress.

Naturally, the society this class has fashioned, that is, modern capitalism started controlling the educational and intellectual activities and orienting its courses in a way that the system appears just, rational as well as permanent. James Harvey Robinson, a forgotten American thinker, wrote in 1923 (titling capitalist economy as "business") : "While we have permitted our free thought in the natural sciences to transform man's old world, we allow our churches, schools and even our universities to continue to inculcate beliefs and ideals which may or may not have been appropriate to the past, but which are clearly anachronisms now."²¹ All these are geared to serve "the now all potent business inter-

ests, backed by the politicians and in general supported by the ecclesiastical, legal and educational classes. Many of the newspapers and magazines are under their influence, since they have become the business man's heralds and live off his bounty."²²

Now there is no quarrel of the kind between capital and religion. "Most religious institutions make easy terms with business, and far from interfering with it or its teachings, on the whole cordially support it."²³ The role of religion among the people in social life is not only comparable to a sedative drug like opium; it can also be used as a strong frenzy producing narcotic. So all over the world religious faiths are being encouraged by the capitalist system.

The crisis-ridden capitalist system has been gaining lease of life by creating ever larger proportion of 'stupid people', that is, people without consciousness of the social process and their own social positions, with the help of its cultural, educational, intellectual and communicational machineries and by encouraging religious fanaticism. Books on unscientific fads, irrational beliefs, spiritualistic faiths supported by pseudo-scientific assertions and interpretations abound in the print market. Those of the kind written by renowned but confused scientists are given wide media coverage. People are enticed to buy and read them. Books and articles written by other equally qualified scientists but opposing and exposing these rubbish are denied publication or suppressed in silence. Thus common people are given only one side of the picture and thus trained or conditioned to become credulous. Modern Brunos and Galileos are not physically persecuted but subjected to manipulated silence and effectively undermined.

The situation is still worse in our country. Here, unlike in Europe, the fetters of religious beliefs and antiquated mode of thinking were never seriously broken but

rather adorned as national glories. And in recent time the trend has got greater momentum through a process of allout religification of our cultural educational affairs. Chanting of Saraswati hymn, teaching of Vedic mathematics, etc., are being enforced in the schools. The NCERT in its latest curriculum proposal suggested to make sciences and mathematics optional and religious lessons compulsory in the secondary school syllabus. Where will it lead us to? A few decades back, Professor S. N. Bose, in an article on Galileo, wrote: "The orthodox churchmen tried as usual to strangle science. As a result Italy fell backward. France, England and other countries availed the fruits of lifelong strivings of Galileo."²⁴ He wanted to point out that the country which had first embarked on the path of Renaissance, which had produced in the fields of arts, literature, science, men of genius like Patriarch, Boccaccio, Raphael, Michelangelo, Leonardo de Vinci, Bruno, Galileo and others, gradually faltered behind France, England, Holland, Germany, etc., because it could not shatter the domination of religion in time. On the other hand, those countries which had been able to destroy or delimit the supremacy of religion over social affairs could go forward and prosper.

This is an important lesson. Recapitulating the old history we can understand what religious bigotry can do to a country. Looking at the present reality we can realize why capitalist system is encouraging religious fundamentalism in both its liberal as well as fanatic forms and also how. And lastly, the life and struggle of Giordano Bruno can show us what we are to do in order to combat this situation.

Recently, attempts have been made by some scholars to undermine his struggle by branding it as excessive anti churchism, or by drawing attention to his fascination towards ancient Egyptian magic arts or oc-

From the Breakthrough archives

cult practices²⁵. These are motivated, consciously or unconsciously, by the desire to cleanse the church of its age-old passion for subverting reason, science and freedom of inquiry and persecuting those who dared to go beyond dogmatic theology.

Bruno's words are not important today. Most of them are of historical interest only having nothing to do with present day teachings of science. To the historians of science it is quite clear that the details of what Bruno wrote or speculated on are no longer valid in the light of the scientific knowledge acquired till today. But the fact that he had challenged the authority of religion in order to defend the cause of truth, science and reason, and that he had done all what he did with the known consequence of fatal punishment — that is something different. That puts the question squarely on our face : Why should we cultivate science and how — for career, money, name and fame, foreign trips, national and international awards, or, for upholding truth, for serving the people, for enlightening the laity?

This is where Bruno is still relevant today. This is why we should cultivate his life even after 400 years of his death. □

References

1. Quoted in: A. D. White, *A History of the Warfare of Science with Theology*, Vol. 1, New York, 1960, p.124.
2. Quoted in: Mansel Davies, *An Outline of the Development of Science*, Mumbai, 1959, p.43.
3. Quoted in: A. D. White, *op. cit.*, p.117.
4. Quoted in: *Ibid*, p. 126.
5. Quoted in: *Ibid*, pp.126-127.
6. A. W. Benn, *History of Modern Philosophy*, London, 1977; p.8.
7. Quoted in: James Jeans, *The growth of physical science*, Cambridge, 1947; p.139.
8. Quoted in: *Ibid*.

9. Quoted in: M. N. Roy, *From Savagery to Civilization*, Mumbai, 1943; p.62.
10. Quoted; *Ibid*. pp. 62-63.
11. Quoted; James Jeans, *op. cit.*, p.140.
12. *Ibid*; p.140.
13. Quoted in: Frank Gaglioti, *A man of insight and courage: Giordano Bruno, philosopher and scientist*, World Socialist website in Internet.
14. Jeans, *op. cit.*; pp. 139-140.
15. *The Catholic Encyclopaedia*, Vol. III, New York, 1999.
16. *Ibid*.
17. Quoted in: Jeans, *op. cit.*, p. 140.
18. Quoted in: *Ibid*.
19. Quoted in: Gaglioti, *op. cit.*
20. Jeans, *op. cit.*, p. 141.
21. James Harvey Robinson, *The Mind in the Making*, London, 1934; p. 12.
22. *Ibid*, p. 127.
23. *Ibid*, p. 120.
24. Satyendra Nath Bose, *Galileo* (in Bengali), in *Bijnaner Sankat O Anyanya Prabandha*, Calcutta, 1964; p. 139 (translated).
25. Francis A. Yates, *Giordano Bruno and the Hermetic Tradition*; Chicago, 1964, — *The Art of Memory*; Chicago, 1966.

Other Sources

1. Dictionary of Scientific Biographies; American Council of Learned Societies; Vol. II, New York, 1970.
2. The New Encyclopaedia Britannica; Vol. 2, Chicago, 1993.
3. A Dictionary for Believers and Nonbelievers; Moscow, 1989.
4. Dictionary of Philosophy; Moscow, 1984.
5. Howard Selsam (Ed.) — *Handbook of Philosophy*; New York, 1949.
6. Frank Thilly — *A History of Philosophy*; Allahabad, 1975.