# THE VIRGIN BIRTH AND THE BIRTH OF SCIENCE

*by*

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BOTH parts of this title may create uneasiness; together they might amount to a provocation. In pondering the birth of science one comes up against a disconcerting aspect of life. It is always disappointing to realize again and again that things which we take for granted are in fact novelties, perhaps wonders, yet treated with studied neglect. They are noticed only when it is too late, although they have been within easy reach, almost at arm's length such as the pillars of this church.[1]

Pillars of a Gothic church hold arches thrusting boldly upward and combining at times in dazzling patterns, of which fan vaults are luxuriously rich examples. The virtuosity of Gothic architecture has often been noted. Much has been said about the daring confidence which Gothic pillars, arches and vaults inspire even in their stark solidity. Daring and confidence are not, however, nearly as tangible as are stones. Worse, any discourse, however brief, on confident daring may readily land one in philosophy which for some time now has become the most effective tool to undermine one's confidence in one's own mind and turn thereby into mere bravado whatever daring one still may muster.

It may therefore be more helpful to turn to another aspect of Gothic churches, namely to the big clock which is a chief ornament of their spires. Whatever the history of the big clock of this church dedicated to St Mary the Virgin, undoubtedly it had a clock from almost the moment its tower was completed around the middle of the fifteenth century. The rise of Gothic architecture with its bold thrust into daring heights was, let us not forget, almost simultaneous with the invention of mechanical clocks. They represented no less bold a thrust of the human mind into previously uncharted depths where the working of nature lay hidden. As the architecture of Gothic cathedrals took on more and more embellishments, the clockworks in their spires too became more and more elaborate. Few cities were, of course, as rich as Strasbourg where the cathedral clock produced an intricate mechanical show each time the hour struck, and a particularly dazzling one at noon.

Before long the intricacy and exact steadiness of the Strasbourg cathedral clock took on a cosmic symbolism as the image of the

machinery of the world. The symbolism had no less a mediaeval provenance than the mechanical device that made that clockwork theatre possible. The device does nothing less than turn the acceleration which gravity gives to falling bodies into a steady motion, or a motion with constant velocity. The device will appear worthy of a first-class genius as soon as it is seen in its true nature, a double feedback mechanism.[2] What may be its first form is on display in the left nave of Salisbury Cathedral.

Like any human invention, the mechanical clock too had a potential that cuts two ways. In these days when the mechanization of life seems to take on oppressive forms, it is tempting to deplore the clockwork as the first step along a road to possible global disaster. But if there was such a first fateful step in the wrong direction, it was not so much the clockwork as the cam, another famous mediaeval invention. It may have been prompted by pressing economic needs. The cam transformed circular motion, such as the turning of a watermill's wheel, into a longitudinal one that could be used to operate hammers and saws. The invention of cams gave further impetus to the proliferation of windmills that had first sprung up in the early mediaeval centuries.[3]

No material need seems to have been the prime force behind the invention of mechanical clocks. Monasteries, the great civilizing force of Europe, had had for eight hundred years an accurate daily schedule without the help of mechanical clocks. No material gain could be derived from a signalling of the beginning of the day with great accuracy when the means of transportation to the workplace were very inaccurate and unreliable. If one is to look for a spiritual gain to be at work behind the invention of the driving mechanism of mechanical clocks, it may easily be spotted in the Scripture lessons, read aloud in monasteries and cathedral chapters. There one was reminded at regular intervals of Paul's words to make the most of the present time (Eph. 5, 16) and make the most of any opportunity (Col. 4, 6).

Such esteem of the value of time did not mean an infatuation with the actual moment as if it alone existed. Here too time was appraised with an eye on timelessness or eternity. But the relation of time to eternity can be seen in two ways. Whenever or wherever the idea prevailed that eternity has already set in, time depreciated. Illustrations of this are the great ancient cultures, all steeped in the belief that the actual moment merely repeated countless others. They all formed part of an eternal flow of great cycles of birth, growth, decay, death and rebirth — all repeating one another in monotonous succession.[4]

In such an outlook nothing was more natural than to restart the counting of time from the beginning of each new cycle. In ancient

Egypt the rise of a new dynasty was taken for such a new starting-point. In his recital of the Egyptian past Manetho lists some thirty dynasties without ever combining into one count their respective time spans. He is seemingly oblivious of the well over three thousand years monumentally signalled by the oldest pyramids. The Chinese of old kept a continuous chronology but they failed to develop it into a history properly so called. Nor did true historical consciousness begin with the great Greek historians. Undoubtedly, theirs was a keen analysis of the sociological and psychological factors that played a decisive role either in the encounters between the Greek city states, or in those between the city states and their colonies, or between Greeks and barbarians, the latter represented either by the Persians or by the Romans. But not even a Thucydides or a Polybius could see any other general feature in those encounters spanning over four centuries than the inevitability of a rise to be followed by a decline. In his account of the conquest of Greece by the Romans Polybius took explicit comfort from the belief that Rome's spectacular conquest of the oikumene was to end in a disintegration of Roman power.

Earlier, when times were more propitious for the Hellenes, such as in the days of Aristotle when Greece made ready to Hellenize the whole world, bursting energies mixed with shallow complacency, a sure sign of eventual decay. It was the complacency of those who believed themselves to be riding on the crest of the wave of history. Such is the reason behind Aristotle's startling claim that the crafts and arts or the sciences and technology of his day stood at their highest possible development. Nothing more was conceivable in the way of life's comfort. The reading of Aristotle's works never led to scientific discoveries, except in the sense of instilling a sense of furious frustration in minds bent on making inventions. But if one reads the context of that incredibly smug statement of the Philosopher, one finds the true explanation for it. Aristotle explicitly mentions that the technical inventions available in his day had been invented in countless times in countless previous ages or cycles. He also endorsed the view that history would repeat itself in a generic way, though not in individual details. There was not to be another Aristotle, but there would be an endless sequence of Aristotelians, Platonists, Sophists and Epicureans — all repeating themselves without ever saying anything really new, while history could but repeat itself. Historians were to repeat one another.

Such is the fateful spectre of the depreciation of time if one believes that eternity has already set in. Time, however, becomes a priceless commodity if it is a lead, and the only lead, to eternity. Once there is on hand such a difference between time and eternity, it becomes logical and inevitable to think about the beginning of

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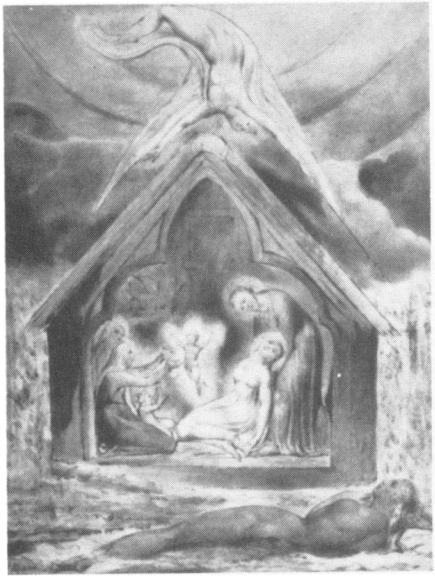
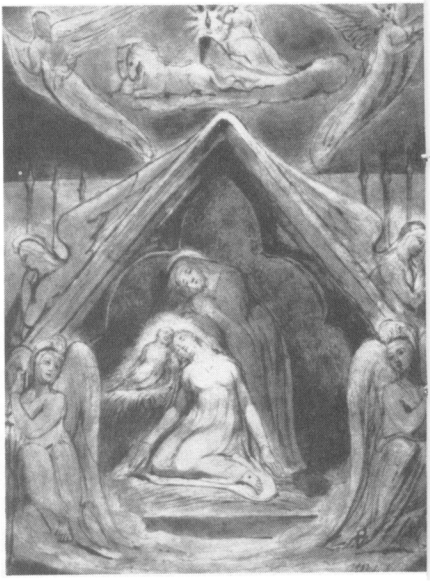
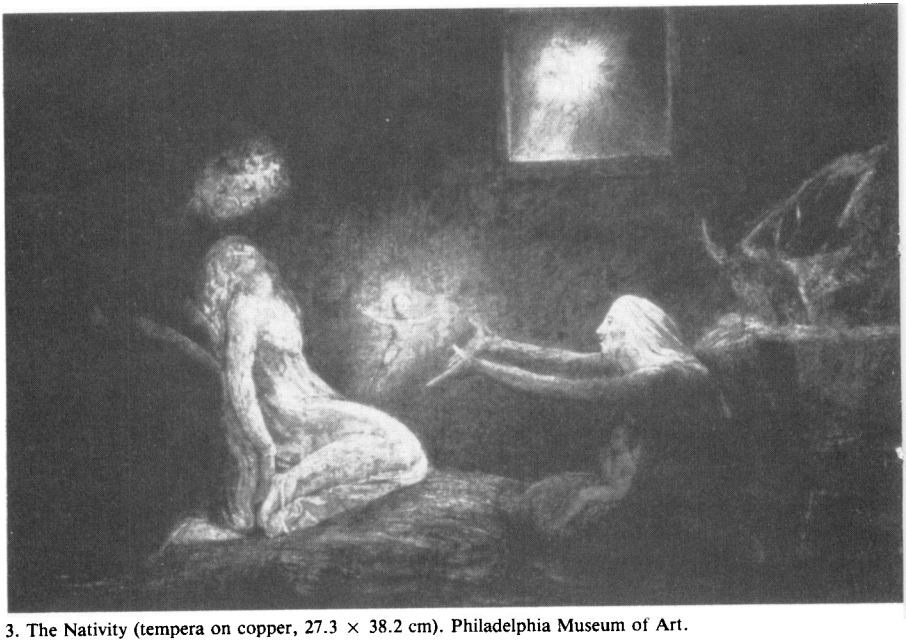


1. Nativity, Ode VI. The Descent of Peace, Huntington Library, San Marino, California.



2. Nativity, Ode VI. The Star of Bethlehem, Huntingto Library, San Marino, California.



3. The Nativity (tempera on copper, 27.3 × 38.2 cm). Philadelphia Museum of Art.

4. The Adoration of the Kings (26.6 × 38.1 cm). Royal Pavilion, Brighton.

5. The Flight into Egypt (27.2 × 38.3 cm). George Goyder, Long Melford, Suffolk.

time. No wonder that the premium which is put on eternity in the Christian creed goes hand in hand with the categorical assertion of creation in time as well as out of nothing. Creation in time is a *Christian* dogma, an assertion which may but rankle in this age that wants to live on the quicksand of 'ecumenical' verbalisms and not on the solid ground which is on hand when truth is protected by verbal statements turned into dogmas. Long before theologians fond of truth made much of that nowadays highly suspected word, it was already part of the Apostolic and post-Apostolic semantics.

But perhaps not everything is lost in this age in which so many theologians claim to be the echoes of the Apostles without wanting to share their love of dogmatic truth. Unlike the Apostles who did not want to appear scientific, these theologians, often woefully amateurish in the sciences, try to sound scientific in the belief that thereby they can gain credibility in this age of science. They still have to discover the only manner in which science, modern science, can be a support for theology, though only for a genuinely dogmatic theology. Its very foundation, the doctrine of creation out of nothing and in time by the Father Almighty, or Pantokrator, can indeed receive enormous support from modern science provided the theologian knows about things science cannot know. With this sensitivity about the limitation of the methods of exact science, the theologian will have an eye for spotting the connection between a firm belief in the dogma of creation in time and the historic moment of the birth of science.

Last year's celebrations of the three hundredth anniversary of Newton's *Principia* may still reverberate strongly enough to turn to that book in speaking about the birth of science. But the *Principia* can be a birth of science only in the mythical sense in which Pallas Athene sprang forth full grown and fully armed from the head of Zeus. There is no such birth. Not that the uninitiated reader of the *Principia*, if he is able to read beyond its first few pages, can gather from it anything about Newton's immense debt to his predecessors. The reason for this is that, very different as they could be, the scientific geniuses of the century of genius had one thing in common: Galileo, Descartes and Newton were at one in their resolve to give as little credit as possible for anything they learned from others. Newton could not be ignorant of the fact that of his three laws of motion, the very basis of all physics, the first and the second, the law of inertial motion and the law about the equality of action with reaction, were not his. They had been stated by Descartes, a *bête noire* for Newton who in his old age spent much precious time in erasing Descartes's name from his manuscript notes lest posterity should suspect the measure of his debt to the Frenchman.

Being the child of a most self-satisfied century in which the

unflattering term, 'Middle Ages', was coined,[5] Newton could not know that Descartes himself had been a borrower. In Newton's Protestant England ignorance about the Middle Ages was a mark of learnedness. The rationalism started by Descartes assured the same in seventeenth-century Catholic France. As to Catholic Italy, Galileo, the legendary champion of Copernicus, was not reminded about the provenance of the idea on which Copernicus relied in order to cope with the dynamical problems of the motion of the earth. The idea related to the fact that clouds floating in the air and stones dropped from a tower do not fall behind with respect to a fast rotating and even faster orbiting earth. They do not because, according to that idea, they share in the moving earth's impetus or momentum, to use the modern term. Impetus meant inertial motion or the first law of Newton.

Galileo was not reminded of, let alone pressed on, the provenance of the notion of impetus, because in the Collegio Romano of Clavius and Bellarmine nobody thought of the impetus theory as a recent invention. It came to the teachers in the Collegio Romano from the Jesuits at the University of Coimbra, who in turn learned about it from the Dominicans at the University of Salamanca. But none of the latter, not even Domingo de Soto and his immediate predecessors, spoke of the impetus theory as something new. Around 1550, the names of Buridan and Oresme, two glories of the Sorbonne two centuries earlier, were mere curiosities if mentioned at all.

That Buridan was the first to formulate inertial motion was discovered in a heroic way in the early twentieth century. Had the discoverer, Pierre Duhem, been an agnostic, a rationalist, a positivist, let alone a Freemason of the virulent Gallic brand, or a mere opportunist in academia, he certainly would not have made much of an all-important point in Buridan's commentary on Aristotle's *On the Heavens*, which he had to discover and decipher in addition to interpreting it in a magisterial way. The point is that Buridan formulated the inertial motion with an eye on the creation in time of all heavenly bodies, that is, their creation in the beginning:

> God, when He created the world, moved each of the celestial orbs as He pleased, and in moving them He impressed in them impetuses which moved them without His having to move them any more except by the method of general influence whereby He concurs as a co-agent in all things which take place. . . . And these impetuses which He impressed in the celestial bodies were not decreased or corrupted afterwards, because . . . there was no resistance which would be corruptive or repressive of that impetus.[6]

But if Buridan's belief in creation in time was so crucial for science, there arises the question about mediaeval Jewish, and

especially Muslim scholars — many of them commentators of Aristotle for six centuries prior to Buridan. Since their religious tenets implied creation out of nothing, they could have very well stolen the march on Buridan. They did not, because Buridan's faith in creation out of nothing was an emphatically *Christian* faith. For Buridan, the Christian, the Creator was an infinite incorporeal being who appeared in a finite body and in time. Buridan, like countless Christians before and after him, looked at the flesh-and-blood Jesus as the one in whom all were created, to recall an expression Paul uses more than once. Paul uses that expression to stress the identity between the Father and the Son and forestall thereby the danger of introducing a dualism in God.

Another biblical expression, the *monogenes* or only-begotten, as used by John in reference to Christ, provided a safeguard against the opposite danger, namely, to see no difference between the universe and its Creator who appeared in body. By applying the term *monogenes* or only-begotten to Christ, John also impressed on early Christians that the universe could not be a *monogenes* or a begetting, that is, an emanation from God. John's move should seem revolutionary if set against the general belief in Hellenic and Hellenistic pagan milieux about the cosmos as an exclusive begetting from the divine.[7] The view of the cosmos as the only begotten product of the divine served as the quintessence of classical pantheism in which, unlike in its modern counterparts, the divine and the sacred were still taken seriously.

Few Christians of Buridan's time were cavorting with pantheism, but a hundred years later, following the rediscovery of Plato's works in the West, the situation became very different. While the Church could lose many souls to a pantheism couched in Platonist terms, the Christian soul, the Church, had in its belief in Christ, the only-begotten Son, an effective safeguard against pantheism. The absence of this safeguard in Jewish and Muslim monotheism is the reason why intellectuals in both often espoused pantheism while paying lip service to the doctrine of creation out of nothing and in time. So much in a nutshell about the reason why the Christian Buridan and not the Jewish Maimonides or the Muslim al-Ashari (let alone the pantheists Avicenna and Averroes) formulated the law of inertial motion that secured the birth of science.

Jewish and Muslim divines always had a deep aversion to the Christian doctrine of incarnation because it meant God's becoming flesh in the conceivably most real way. The Incarnation stands not merely for the appearance of God in bodily form but for his coming into corporeal visibility in the manner in which all human beings do: they all must be flesh of their mother's flesh. To speak first of the Muslim perspective, the human body could hardly be

attractive in so far as it came from the woman's body. Women are mentioned as present in the Koran's paradise only as the means of the perpetuation of delights that are subtly synonymous with sin.

Jewish antipathy to the Incarnation goes far beyond meticulous respect for the commandment which forbids the making of bodily images of God. Jeremiah had to remain an unpopular figure for Jews not only because of his harsh prophecies about Jerusalem but also for his celibate status though he took it up at divine command.[8] The virginity of a young woman had a value in Jewish eyes only in so far as it catered to the eventual self-esteem of her future husband. Still another source of Jewish antipathy, nay revulsion, to the Incarnation lies beneath a remark now more than half a century old, a remark presented as the registering of a facet of history: 'As soon as the doctrine of the Virgin Birth was publicly preached, no more Jews were converted'.[9] The scorn which characterizes the references in the Talmud to Mary as a harlot or as a female panther (an ugly distortion of *parthenos* or virgin) should be seen in the light of Jewish rejection of the idea of original sin. Today, this rejection can appear in the form of a fear that reference to original sin may imply a lessening of personal responsibilities for Auschwitz and Dachau.[10] But the enduring reason for that rejection is what constituted Paul's chief message to the Jews and Gentiles, namely, that the relation between God and man is based on God's gratuitous grace, the ultimate ground of man's ability to have any standing before God, let alone a claim on him.

Herein lies the deepest sense of sin, namely, man's perversion in claiming autonomy with respect to any of his faculties, and especially of that most stupendous faculty of his whereby other human beings can be generated. To speak only of post-modern man, his manifold sexual troubles of gigantic proportions, of which AIDS has become a frightening reminder, derive from the complete emancipation he wants from God's laws. On the contrary, Christ's complete subjection to the Father's will manifests his absolute freedom from sin, even from any proclivity to sin. The dogmas relating to the Virgin Mary are but the consequences of Jesus's absolute sinlessness or divine holiness. It should therefore be of no surprise that whenever or wherever the virginity of Mary has not been taken in its full breadth and width, there loomed large the danger of not doing full justice to the divinity of Jesus.

This pivotal role of Mary received its unsurpassed expression in Newman's book-length letter to Pusey. There Newman stated that Athanasius

> . . . engraved indelibly upon the imagination of the faithful, as had never been before, that man is God, and God is man, that in Mary they meet, and that in that sense Mary is the centre of all things.

Not that Newman claimed to know anything about Athanasius's devotion to the Blessed Virgin. Nor did he claim that Marian devotion among Catholics had not been open to criticism. In this age of 'People of God' Catholicism there is an eerie timeliness of his observation in the same Letter:

> The religion of the multitude is ever vulgar and abnormal; it will ever be tinctured with fanaticism and superstition, while men are what they are. A people's religion is ever a corrupt religion, in spite of the provisions of the Holy Church.[11]

But against the unsavoury facts lurking behind these sobering remarks, Newman could call attention to a fact of overriding importance:

> If we look through Europe, we shall find that just those nations and countries have lost their faith in the divinity of Christ, who have given up devotion to His Mother, and that those on the other hand, who had been foremost in her honour, have retained their orthodoxy.

After adding in the same breath some harsh words on Anglicanism that should seem prophetic, he drew his great conclusion:

> In the Catholic Church Mary has shown herself, not the rival, but the minister of her Son, she has protected Him, as in His infancy, so in the whole history of the Religion.[12]

If there is any fault in that Letter to Pusey, it is Newman's failure to refer to a sermon he had preached from the pulpit of this church of St Mary the Virgin ten years before he became a Catholic. For his Letter's argument is a fully developed answer to the question he raised in the sermon preached in 1835 on the Feast of the Annunciation:

> For what, think you, was the sanctified state of that human nature, of which God formed His sinless Son; knowing as we do, 'that which is born of the flesh is flesh', and that 'none can bring a clean thing out of an unclean'?[13]

Newman could have also pointed out to Pusey that the entire logic of Athanasius's resistance to Arius hinged on his realization that Arius failed to see both the seriousness of sin and the infinity of the offence done by sin to God's holiness.

The chain of events that led from Nicea to Chalcedon need not be reviewed here. Its instructiveness with respect to Mary is replayed today in the efforts of those divines who try to rehabilitate Arius or, in general, suggest a Christian faith free of strictly divine elements in Jesus.[14] As to his mother, they naturalize her divine motherhood in three stages in which the sequence begins with what is least firm in Christian consciousness about Mary. Many modern Christians have indeed accommodated themselves to the claim,

first tolerated among early Christians but then strictly forbidden to them, that Jesus had indeed brothers and sisters in the strict sense of these English words. These Christians still have to wake up to the age-old information that in Hebrew brother (*ah*) can readily mean cousins, second cousins, third cousins, and even cow-cousins.

The next stage, which relates to Jesus's miraculous birth in Bethlehem, is usually handled with a sleight of hand which sheer fictions deserve. Nothing essentially more is at play when solemn references are offered to Jesus's true humanity as a factor that requires a human birth attended with all its clinical and quasi-clinical inconveniences. Once those two stages have been disposed of, little remains of the inborn Christian resistance to attempts whereby Jesus's miraculous conception is presented as a disparagement of Joseph's maleness.

Here, only a week before the onset of Advent, it may be appropriate to concentrate on Mary's virginity in regard to her giving birth to Jesus in the stable. For Roman Catholics it is strictly a part of faith that Mary remained virgin *in partu*. Many present-day Catholics, raised on catechetical experimentation and ecumenical minimalism, are unaware of this dogma. Their theologians failed to produce a reply to H. von Campenhausen's 'scholarly' spoofing of that dogma whose origin he saw in the 'ascetical' influence of the early monks, in Augustine's 'hostility' toward sex, and the Magisterium's insistence on priestly celibacy.[15] But did Jesus turn himself into an 'ascetical' gymnosophist by holding high poverty and virginity as particularly appropriate responses to his call to perfection? Or was Paul less than a chosen vessel of grace as he sparked an ethos by his remark that a married person is of necessity divided between Christ and a mere human being?

For its failure alone to convey strongly that ethos as a chief driving force of genuine Christianity, Rahner's long essay on Mary's virginity *in partu*[16] is not the Catholic answer to von Campenhausen's widely available study. Though far from being a maximalist, Rahner acknowledged that the virginity in question *is* a dogma. His essay is a telling illustration of the trap which reverence for Kant may pose for Catholic theologians. On the one hand Rahner defends the substance (noumenon) of the dogma, although as a Kantian he cannot know anything about it. On the other hand he claims, contrary to the Kantian position, that nothing can be really known about specific (phenomenal) aspects of the dogma. His predicament is all the more curious as he refers to passages of Jerome, Ambrose, Augustine and quite a few other Fathers who were unanimous in seeing Mary's virginity as being incompatible with the phenomena they call *sordes*. Such is their tactfully graphic shorthand for the physiology of ordinary births. In fact, Rahner

ends up by saying that no realistic detail may be specified in Mary's virginity *in partu*. That her hymen had to be preserved intact Rahner considers as a possibly futile obsession with culturally conditioned aspects of virginity. He also dismisses in a line or two the patristic and post-patristic comparisons of Jesus's miraculous passing from Mary's womb with his passing through a closed door after the Resurrection.

With that Rahner shuts the door through which he could convincingly lead himself and his still many admirers to the ground where something physically miraculous is on hand in Mary's giving birth to Jesus. In fact, he offers his article as a set of marginal notes to the position in which some recent theologians denied the miraculous character of that birth on the ground that the true humanity of Jesus demanded a birth as realistic as any other birth.

Rahner recoils from taking all the fateful steps with those divines whose eyes are always widely open to the human, but almost invariably shut to the divine. In his case too the faith imbibed from catechism prevails in critical moments. Most of the time he leaves that faith covered under heaps of specious distinctions of which Kantians (and their Aquikantist brand), fond of the words 'as such', would be proud. Yet that childhood faith deserves more than occasional glances. Authentic theology may draw its strength from that faith. From it even an artistic genius can draw visions that baffled art historians, for whom the sacred has become a glorified aspect of the secular.

Illustrations of this bafflement can be provided even by Renaissance painters, whatever their craving for purely human details in Jesus's life. For when all is said about the women of doubtful virtue that modelled the Virgin Mary for Raphael, Leonardo and Titian, something is invariably left unsaid about the sacredness latent even in pictures bordering on the sensual if not frivolous. But what to say when even the least trace of sensuality, even of ordinary humanness, is absent in pictorial renderings of the Nativity by an artist who as an adult mixed his childhood's Christian faith with strange flights of imagination?

One indeed becomes speechless on standing before one of the greatest but possibly least appreciated treasures of the Philadelphia Museum of Art, a small painting by William Blake with the Nativity as its subject (Illustration 3).[17] Its intensely elevated religious inspiration keeps defying authors of books on Blake's art. They, of course, get no safe guidance from authors of books or articles on Blake's religion.[18] As a result Blake is presented either as an eccentric Puritan or an ex-Swedenborgian Magus[19] living in a world which in all appearance is the world of the Bible, but at times a strange distortion of it. Much is made of Blake's invectives against

natural theology, of his exaltation of sexual life coupled with gibes at celibacy, and of his apparent insinuations of Mary's non-virginity, and perhaps of something deplorable in her. Yet interpreters of Blake's portrayal of Mary give themselves away all too often through lack of elementary information. One of them, for instance, finds it strange that, in another nativity scene by Blake (Illustration 2), Joseph is dressed in blue, the symbol of virginity, while Mary is dressed in white, as if the colour white had not been the symbolic colour of virginal state.[20] It is indeed their premarital virginity which Christian maidens want to signal by their persistent preference for white wedding gowns, a colour strangely adhered to even by their radically feminist sisters.

No wonder that such historians of art are unable to see the importance of the very substance of the message of Blake's Nativity (Illustration 3) in spite of its most unusual character. Did ever any artist prior to Blake depict the birth of Jesus as an infant flying upward in the air while Mary is sitting on her feet? Her posture is all the more intriguing because for two centuries or so prior to Blake women had ceased to adopt that posture as they went through the travails of childbirth. Blake possibly adopted for Mary that posture because of the upsurge of his childhood faith. There the infant was the Son of God and Mary, though the Mother of God, remained a creature ready to bow in worship before her divine Saviour. The latter, though incarnate as an Infant, was so unlike any other infant as to fly upward immediately after birth. Was not the miracle of that upward flight a symbol of the miraculous exit out of a womb into which only the Holy Spirit entered at the moment of the Infant's conception?

Only two or three hundred years before Blake, Flemish and Italian painters came forward with picturesque portrayals of Mary's own birth with maidservants and midwives milling around St Anne, in the midst of washtubs, pitchers, rolls of linen — so many reminders of what several Church Fathers suggest by using the word *sordes*. No such *sordes* in Christ's birth. Or to recall Jerome's antithesis: 'Should the woman giving birth be overtaken by pain, midwives pick up the crying infant and the husband will hold the exhausted wife. . . . But in no way should this be thought of the Saviour's mother and of that just man, Joseph. Here is no midwife; no need here for women to be fussing about. His mother herself wrapped him in the swaddling clothes, herself mother and midwife.'[21] With no knowledge whatsoever of these words of Jerome, Blake painted that Nativity as if guided by them. With an almost complete disregard for 'human' details, his Nativity is dominated by an Infant soaring upward as befits a divine being and by a maiden-mother lost in ecstatic adoration.

Such a view of the Nativity, of a truly marvellous birth, was not a momentary transport with Blake. He included a close replica of the one just described among the watercolours he painted for Milton's ode, 'In the Morning of Nativity' (Illustration 1).[22] Another of those watercolours (Illustration 2) shows the Infant as if he had just completed his miraculous flight and settled in a bafflingly upward position in a manger padded with straw. Mary is still sitting on her feet with her head leaning towards the Infant while Joseph stands over both of them with head bowed and hands folded in prayer. A mere look at Mary robed in white and her face bathed in a glow of ecstasy should be enough to reveal a most important aspect of Blake's religious convictions in his mature years, his fifties, to which belong those watercolours and all the paintings reproduced here.

The Creator, or the Father, always appeared to Blake in a partly unfavourable light as if he had been responsible for all sin and suffering. But in Christ he invariably saw the embodiment of unblemished goodness and holiness, a complete antithesis to sin and therefore the source of liberation from it. Far from being a small matter to him, the process whereby one is freed from one's sins must have exercised him a great deal. Otherwise in old age he would not have 'quite held forth one day', to recall the reminiscences of a friend, 'on the Roman Catholic Church being the only one which taught the forgiveness of sins'.[23] In that old age he once retorted at the unfavourable comment of a friend on a painting of his with the words, 'the Virgin Mary appeared to me and told me it was very fine'.[24]

Blake's unbounded admiration for Christ served as the contrast against which he bemoaned the evils of his times. Though often, perhaps all too often, have been quoted his lines about the 'dark Satanic mills', very rarely in connection with what immediately precedes them: a worshipful recall of the legend that Joseph of Arimathea had brought the five-year old Jesus to Glastonbury: 'And did those feet in ancient time, walk upon England's mountains green? And was the Holy Lamb of God on England's pleasant pastures seen?'[25] In Blake's case too, reverence for Christ could not help but devolve on his mother. Had that transfer not been deeply operative in Blake's mind and heart, he could not have depicted Mary as he did in his 'Adoration of the Kings' (Illustration 4) and 'The Flight to Egypt' (Illustration 5). Just as his Nativity scenes, these two would easily take first place among countless paintings of the same subjects. Those subjects involve no miracles that can readily convey the sense of the holy. Yet if Blake's renderings of them have an overriding message, it is the reflection of the Infant's absolute holiness on his Mother, whose face, immersed in an

inward look of contemplation, would evoke the halo even if Blake had not drawn it with the greatest care.

Blake's portrayal of Mary is a graphic illustration of the hold the birth of Jesus can have on minds ready to acknowledge it to be the birth of the only-begotten son of God. In Blake's case the genesis of that hold may in itself appear well-nigh miraculous. In the case of those whose Christian upbringing was far more protected from confusing influences, the same hold should arise naturally, however supernatural it may be in itself. In the absence of that hold they will lack a handle on many facets of history, one of them being the strange history of science, with its repeated stillbirths and one viable birth.

In Blake's England there prevailed a sickening smugness about that birth. Admiration for Newton, a famous drawing of Blake is the proof, was so great as to attribute to him quasi-divine powers. The compass which in one of Blake's paintings of creation is in the hands of Urizen, the Creator's agent, is now in the hands of Newton. Unknown to Blake and for a while yet to all Englishmen, it was that smug satisfaction with Newton's achievement that allowed French science to surge far ahead of British science during Blake's life. And, of course, when one is so smug with the science on hand, one is not prompted to ask questions about its true origins. Or if one indulges in the luxury of criticizing science, the result will be a misplaced evaluation in which the tool is blamed for the atrocities committed by it. Blake's writings contain more than one virulent line similar to the one on Satanic mills.

Blake might have gone mad had he suspected that Hiroshima was in store in the not-too-distant scientific future. He could not have had the faintest idea of the global character of the possible misuses of science, replacing Satanic mills with a Satanic globe. An ecological disaster, enveloping the entire globe, is not so unlikely as to fail to generate anxiety all over the world. The deepest source of that anxiety is the realization that whereas man knows the measure of the danger and knows the means of forestalling it, he wants to know as little as possible about the weakness of his resolve to do his duty. He receives an unsolicited support from divines who by diluting the dogma of original sin keep him in the dark about the true nature of that weakness. Man's deepest weakness is neither physical nor psychological but essentially moral. It turns into a hapless syndrome as long as one tries to cope with it by ignoring sin, actual and original, that alone makes morality an intelligible parameter. It is also the only parameter along which a meaningful approach can be made to the threat of a global death posed by the misuses of science.

Death in turn is inseparable from birth. On the level of nature

death begins with birth. Only the supernatural given most concretely in Christ has ever provided hope that birth would not be the start of a process leading to irrevocable death. Science is no exception to this rule. As long as great creative minds in pursuit of science rested on the level of nature, science ended in stillbirths. Only when supernatural light led those minds was science given the chance for the kind of viable birth which is followed by uninterrupted growth. The latter can go on with no reliance on supernatural light which, however, remains indispensable to keep it *beneficial*, a blessing and not a threat. The light in question, the *Christian* dogma of the creation of the universe out of nothing and in time, is not in itself a supernatural mystery. Unlike the mysteries of Incarnation and Trinity, the idea of creation out of nothing and in time can be glimpsed by natural man. But natural man — the Chinese and Hindu sages as well as the great Greek philosophers are the proof — could not gain a firm hold on the natural truth of creation out of nothing and in time until he was seized by the vision of a birth that came in the fullness, the completeness of time. It was the moment when Joseph reached David's town 'to register with Mary, his espoused wife, who was with child. While they were there, the days of her confinement were completed.'

So states Luke who in recent years has been dragged over 'scholarly' hot coals for his alleged readiness to accept old wives' tales about the Nativity. Had this been the case, he would have produced another of those apocryphal gospels which have one thing in common: their prolixity characteristic of hollow chatter. Instead, Luke offers the utmost reserve befitting one conscious of his full responsibility. About the most stupendous birth ever he states with the maximum of conciseness: 'She gave birth to her first-born son and wrapped him in swaddling clothes and laid him in a manger'.

Those of Luke's readers who expected details typical of a natural birth had to be disappointed. But Jerome, already quoted, divined the essence of Luke's conciseness: Mary did what no woman weakened by ordinary childbirth would do. This is not the only case in Luke's nativity narrative where a miracle is hinted at by a diction which, as if by intent, avoids miraculous details. For that birth, miraculous as it could be, was never to deprive man of his tragic ability to ignore the always gentle light of divine evidence.

When seen in that light, the coming into light of the Babe becomes part of the vision about the woman clothed in the sun. Here too Blake was most original. In his rendering of it the Devil in the form of a huge dragon fails to note the woman though she, wrapped in the rays of the sun, lies under his very feet.[26] Indeed, Blake's paintings of Mary give the same impression as Augustine's

encomium of her, delivered on a Christmas day, in which sublimity and realism are woven into a breathtaking texture:

> Not the visible sun, but its invisible Creator sanctified that day for us, when him who became man for us, the Virgin mother, who herself was created by that invisible Creator, delivered with fertile womb and genitals unharmed. A virgin conceiving, a virgin bearing a child, a virgin pregnant, a virgin fruitful, a virgin forever. Why should you marvel at this? For God had so to be born if He condescended to become a man.[27]

The same alternative of not seeing and seeing the obvious holds true also about the birth of science. Theories about the birth of science are a penny a dozen and even more numerous are the efforts to ignore the problem posed by that birth and the stillbirths that preceded it. Buridan and Oresme may seem to be a far cry from Copernicus, from Galileo, let alone from Newton. It is not likely that Whitehead's imagination would have caught fire had he known about the third volume of Duhem's Leonardo studies published in 1913. It contained an advance glimpse of what became available in print when in 1954 the sixth volume of Duhem's *Système du monde* saw print after almost forty years of delay and after as many years following Duhem's death in 1916.[28]

Whitehead would have probably stayed with his general observation that science owes its birth to the Scholastics' bent on full logical rigour.[29] As one who during World War I, when so many recovered their faith, parted with his Christian faith imbibed in his father's vicarage,[30] Whitehead did not see the connection of that bent on logical rigour with the Scholastics' belief in the Logos or Word in whom the Father could only create an *all* (or universe) pervaded by full logicality. The Scholastics were fully aware of this magnificent reasoning which Athanasius offered about the universe in his anti-Arian writings.[31] But Whitehead retained enough of his Christian upbringing to give it away by one of his phrases that have become classic because of a subtle echo there of biblical phrases. In referring to the quiet birth of science during the mediaeval centuries Whitehead wrote: 'Since a babe was born in a manger, it may be doubted whether so great a thing has happened with so little stir'.[32]

Long before the Silent Night became a global byword about Christmas, Church Fathers, the Liturgy, the Scholastics and pre-modern divines sensitive to the supernatural had been fond, in speaking about Christmas, of quoting a passage from the Book of Wisdom. It is about the final and last plague, the loss of all the first-born in the land of a Pharaoh determined to resist the obvious:

> For when peaceful stillness compassed everything and the night in its swift course was half spent, Your powerful word from heaven's royal throne bounded, a fierce warrior into the doomed land bearing the sharp sword of your inexorable decree (18, 14-15).

Such is the ultimate perspective of the Virgin's giving birth to a Son by whom all were created, in whom all are kept in being, and in whom alone all, science and scientists too, are born, restored to life, and ultimately judged.

## NOTES

[1] St Mary the Virgin University Church, Oxford. There in the Old Library the substance of this essay was presented on 24th November 1988, together with a slide show of all of Blake's paintings relating to the Nativity. It is my pleasure to thank the Revd Brian Mountford, Vicar of St Mary the Virgin, for the invitation.

[2] Described in D. S. L. Cardwell, *Turning-Points in Western Technology* (Science History Publications, New York, 1972), p. 14.

[3] L. White Jr, *Mediaeval Technology and Social Change* (Clarendon Press, Oxford, 1962), pp. 88-89.

[4] For a detailed discussion of the cyclic world view in ancient cultures and of its impact on the fate and fortune of science there, see my *Science and Creation: From Eternal Cycles to an Oscillating Universe*, 2nd rev. ed. (Scottish Academic Press, Edinburgh, 1986).

[5] The term was coined in 1675 by Christoph Keller, German author of history books.

[6] Quoted from M. Clagett, *The Science of Mechanics in the Middle Ages* (University of Wisconsin Press, Madison, 1961), p. 536.

[7] Such appellations of the cosmos can be found in Plato, Plutarch and Cicero, to mention only a few principal authors of classical antiquity.

[8] In his contribution, 'The Hebrews', to H. and H. A. Frankfort, *et al, The Intellectual Achievement of Ancient Man* (University of Chicago Press, Chicago, 1946), p. 260, W. A. Irwin remarks in reference to Jeremiah's celibacy: 'Celibacy and a special "immaculate conception" are ideas that have come into our religious tradition from sources other than the Old Testament'.

[9] E. Worcester, *Studies in the Birth of Our Lord* (C. Scribner's Sons, New York, 1932), p. 40.

[10] See Rabbi Bernard Berkovits, 'The Holocaust: A Jewish Perspective', *The Times* (London, 15th August 1987), p. 10.

[11] J. H. Newman, *Certain Difficulties Felt by Anglicans in Catholic Teaching* (Longmans, Green and Co., London, 1891), vol. 2, pp. 87 and 81.

[12] *Ibid.*, pp. 92-93.

[13] J. H. Newman, *Parochial and Plain Sermons* (Ignatius Press, San Francisco, 1987), p. 309.

[14] The opening salvo consisted in the six essays constituting *The Myth of God Incarnate*, ed. J. Hick (Westminster Press, Philadelphia, 1977). Next came the slightly less misguided *Early Arianism: A View of Salvation* by R. C. Gregg and D. F. Groh (Fortress Press, Philadelphia, 1981). Pro-Arian sympathies were strong at the Oxford Patristic Conference, 1984. Rather revealing should seem the dislike of 'conservative theological opposition' to Arius in *Aruis: Heresy and Tradition* (Darton Longman & Todd, London, 1987) by R. Williams.

[15] H. von Campenhausen, *The Virgin Birth and the Theology of the Ancient Church*, tr. F. Clarke, Studies in Historical Theology 2 (A. R. Allenson, Naperville IL., 1964).

[16] 'Virginitas in partu' in K. Rahner, *Theological Investigations*, Vol. IV, tr. K. Smyth (Helicon Press, Baltimore, 1966), pp. 134-62.

[17] For an easily accessible colour reproduction, see R. Lister, *The Paintings of William Blake* (Cambridge University Press, Cambridge, 1986), No. 23. The same is Plate 502 in the less available definitive edition, *The Paintings and Drawings of William Blake* by M. Butlin (Yale University Press, New Haven and London, 1981), Plate 502.

[18] Including the standard work by J. G. Davies, *The Theology of William Blake* (Clarendon Press, Oxford, 1948), see especially ch. vii, 'The Doctrine of Christ and Redemption'.

[19] On Blake's youthful involvement in Swedenborgianism, see M. Wilson, *The Life of William Blake*, new ed. G. Keynes (Oxford University Press, London, 1971), ch. 2.

[20] Thus Pamela Dunbar in her *William Blake's Illustrations to the Poetry of Milton* (Clarendon Press, Oxford, 1980), p. 96. She sees Mary as 'exhausted by labour' and takes the upward leaping infant for evidence of the 'Platonic belief that the newborn baby descends mature and perfected into the world from another order of existence'. All these gaffes within a mere dozen lines or so.

[21] *Adversus Helvidium*, cap. 8. in Migne PL 23: 201.

22 Illustration to Milton's Nativity, Ode I. In the Huntington Library, San Marino, California. For a commentary, see Bette C. Werner, *Blake's Vision of the Poetry of Milton* (Bucknell University Press, Lewisburg PA., 1986), p. 119.
23 Quoted in M. Wilson, *The Life of William Blake*, p. 346.
24 *Ibid.*, p. 355.
25 'Milton: A Poem in Two Books' in *Blake: Complete Writings with Variant Readings*, ed. G. Keynes (Oxford University Press, 1988), p. 480.
26 In the Brooklyn Museum, New York, Reproduced in Butlin, *op. cit.*, Plate 580.
27 *In Natali Domini iii*, in Migne PL 38: 999 (*visceribus fecundis et genitalibus integris*).
28 For details, see my *Uneasy Genius: The Life and Work of Pierre Duhem*, 2d ed. (Martinus Nijhoff, Dordrecht, 1987).
29 A. N. Whitehead, *Science and the Modern World* (Macmillan, New York, 1926), p. 10.
30 See *Dialogues of Alfred North Whitehead* as recorded by L. Price (Little Brown & Co., Boston, 1954), p. 297. Whitehead offered as one reason that most English soldiers died 'for the worth of the world'.
31 See, for instance, Athanasius, *Against the Heathen*, § 39.
32 A. N. Whitehead, *Science and the Modern World*, p. 12.